DOCUMENT RESUME

ED 291 703 SP 029 924

AUTHOR McPartland, James M.; And Others

TITLE School Structures and Classroom Practices in Elementary, Middle, and Secondary Schools. Report No. 14.

INSTITUTION Johns Hopkins Univ., Baltimore, Md.

SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE Jun 87
GRANT OERI-G-86-0006
NOTE 76p.
PUB TYPE Reports - Research/Technical (143) -- Statistical Data (110)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Academic Ability; Educational Environment; Elementary Secondary Education; *Grouping (Instructional Purposes); Middle Schools; School Demography; *School Organization; *School Schedules; *Socioeconomic Status; *Student Characteristics; *Teacher Distribution

ABSTRACT

This paper analyzes data from the Pennsylvania Educational Quality Assessment (EQA) and the National Assessment of Educational Progress (NAEP) to provide a description of grouping, staffing, and scheduling practices that currently exist in elementary, middle, and high schools. The practices are found to follow a continuum from elementary through high school that proceeds from an early emphasis on "pupil orientation" to a later emphasis on "subject-matter" orientation. These emphases drive decisions about the scheduling, staffing, and grouping practices that foster the particular learning environments and activities that define a school's instructional program. The paper specifically examines the implications of these practices for middle schools. Survey data are displayed in graphs and tables and 29 references are included. (Author/JD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Center for Research On Elementary & Middle Schools

Report No. 14

June, 1987

SCHOOL STRUCTURES AND CLASSROOM PRACTICES IN ELEMENTARY, MIDDLE, AND SECONDARY SCHOOLS

James M. McPartland, J. Robert Coldiron, and
Jomills H. Braddock II

The Johns Hopkins University

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Center Staff

Edward L. McDill, Co-Director
James M. McPartland, Co-Director

Karl L. Alexander
Henry J. Becker
Barbara A. Bennett
Jomills H. Braddock II
Renee B. Castaneda
Barbara S. Colton
Russell L. Dawkins
Doris R. Entwisle
Joyce L. Epstein
Anna Marie Farnish
Denise C. Gottfredson
Gary D. Gottfredson
Edward J. Harsch
John H. Hollifield
Lois G. Hybl
Nancy L. Karweit
Melvin L. Kohn
Nancy A. Madden
Alejandro Portes
Robert E. Slavin
Carleton W. Sterling
Robert J. Stevens
Tammi J. Sweeney
Shi Chang Wu

Center Liaison

Rene Gonzalez, Office of Educational Research and Improvement

National Advisory Board

Patricia A. Bauch, Catholic University of America
Jere Brophy, Michigan State University
Jeanne S. Chall, Harvard University
James S. Coleman, University of Chicago
Edgar G. Epps, University of Chicago
Barbara Heyns, New York University
David W. Hornbeck, Maryland State Department of Education
Michael W. Kirst, Chair, Stanford University
Rebecca McAndrew, West Baltimore Middle School
Sharon P. Robinson, National Education Association

School Structures and Classroom Practices in Elementary, Middle, and Secondary Schools

Grant No. OERI-G-86-0006

James M. McPartland

J. Robert Coldiron
Pennsylvania State Department of Education

Jomills Henry Braddock II

Report No. 14

June 1987

Published by the Center for Research on Elementary and Middle Schools, supported as a national research and development center by funds from the Office of Educational Research and Improvement, U.S. Department of Education. The opinions expressed in this publication do not necessarily reflect the position or policy of the OERI, and no official endorsement should be inferred.

Center for Research on Elementary and Middle Schools
The Johns Hopkins University
3505 North Charles Street
Baltimore, Maryland 21218

Printed and assembled by:
VSP Industries
2440 West Belvedere Avenue
Baltimore, Maryland 21215

The Center

The mission of the Center for Research on Elementary and Middle Schools is to produce useful knowledge about how elementary and middle schools can foster growth in students' learning and development, to develop and evaluate practical methods for improving the effectiveness of elementary and middle schools based on existing and new research findings, and to develop and evaluate specific strategies to help schools implement effective research-based school and classroom practices.

The Center conducts its research in three program areas: (1) Elementary Schools, (2) Middle Schools, and (3) School Improvement.

The Elementary School Program

This program works from a strong existing research base to develop, evaluate, and disseminate effective elementary school and classroom practices; synthesizes current knowledge; and analyzes survey and descriptive data to expand the knowledge base in effective elementary education.

The Middle School Program

This program's research links current knowledge about early adolescence as a stage of human development to school organization and classroom policies and practices for effective middle schools. The major task is to establish a research base to identify specific problem areas and promising practices in middle schools that will contribute to effective policy decisions and the development of effective school and classroom practices.

School Improvement Program

This program focuses on improving the organizational performance of schools in adopting and adapting innovations and developing school capacity for change.

This report, prepared by the Middle School program, describes existing school structures and classroom practices from elementary through high school, using state and national data. It is the first of three reports that (1) describe school structures, (2) examine how varying structures affect student outcomes, and (3) examine how effects on student outcomes may vary by student background and achievement level.

Abstract

This paper analyzes data from the Pennsylvania Educational Quality Assessment (EQA) and the National Assessment of Educational Progress (NAEP) to provide a description of grouping, staffing, and scheduling practices that currently exist in elementary, middle, and high schools.

The practices are found to follow a continuum from elementary through high school that proceeds from an early emphasis on "pupil orientation" to a later emphasis on "subject-matter" orientation. These emphases drive decisions about the scheduling, staffing, and grouping practices that foster the particular learning environments and activities that define a school's instructional program. The paper specifically examines the implications of these practices for middle schools.

Introduction

This paper describes how grouping, staffing and scheduling practices vary in different schools and at different grade levels. We describe trends across grades and in the distribution of practices at particular grade levels. We also investigate how variations at each grade level are related to important demographic features of a school, such as school size and student body socioeconomic mix. This information, based on both national and selected state data, provides a descriptive profile of current practices in American schools that is not available elsewhere <1>, -- a profile that establishes a research base and framework for further research using the same data to analyze the effects of particular grouping, staffing and scheduling practices on the learning environments of different grades.

The practices of grouping, staffing and scheduling in particular schools and grades will be influenced by the demographic characteristics of students and staff (such as the school's enrollment size, grade levels, heterogeneity of student background, and distribution of teacher specializations), and by the school's underlying pedagogical assumptions about how best to deliver instruction to its

---

<1> The only school organization variables with recent national tabulations at all levels are school grade-span and school size (see for example U.S. Department of Education, The Condition of Education, 1985 Edition, Table 1.6, pp. 28-29; Education Research Service, Inc., 1983). Representative statistics on the distribution of staffing, scheduling and grouping practices have not been published in decades (cf. National Education Association Research Division, 1968; Heathers, 1969; Findley & Bryan, 1971; Sterns, 1976) or have focused on a limited range of practices at a single level of schooling (cf. Anderson, 1973; Shane, 1960; Valentine et al., 1981).

students. Seemingly mundane decisions about assigning particular students and teachers to particular locations for particular curricula at particular times during the school day involve much more than the necessary sensible arrangment of fixed personnel and resources -- these decisions about grouping, staffing and scheduling will foster the particular learning environments and activities that define a school's instructional program for its students.

Within the demographic constraints of a school, decisions about school practices at each grade will be strongly influenced by direct or indirect assumptions about two key dimensions: (1) curriculum requirements, and (2) students' developmental needs. Curriculum requirements at different grade levels call for different degrees of teacher expertise or specialization, and imply different prerequisites of students' prior learning. Thus curriculum requirements at a particular grade level will influence how teachers are assigned to different courses and how students are assigned to different instructional groups. Students' developmental needs involve the various dimensions of human competencies and interests and personal growth at particular grade levels, and the ways students at particular stages usually respond to different social and educational environments. Thus, a concern for student developmental needs at a particular grade level will influence how many different teachers and classmates each individual student encounters during instructional activities, and how these groupings and the relationships within them are defined.

Actual decisions about school practices of staffing, scheduling, and grouping can be described as points on a continuum that is defined by the relative emphasis given to individual students' developmental needs or to curriculum requirements (expert subject-matter instruction). This continuum wil tend to vary from one pole at the early elementary grades to an opposite pole at the late secondary grades. The middle grades either will represent a mixed pattern of practices between these poles, or will favor one emphasis over the other depending upon a school's assumptions about pedagogy and the students to be served.

Curriculum requirements and student developmental needs are often in stark contrast at the early elementary grades and late secondary grades and produce different emphases in school practice. Early elementary grades usually emphasize a "pupil orientation" in which a teacher feels a primary responsibility to establish a thorough understanding and close supervision of the needs and interests of each individual student under the teacher's charge. Late secondary grades usually encourage a "subject-matter orientation" in which a teacher takes responsibility for being an expert in particular curriculum subjects and for developing an instructional program that encourages student learning in the subject area. To be sure, good schools can be assumed to establish a balance at each grade between practices focusing on individual student development needs and on curriculum requirements. But we expect to find a continuum across the grade levels of where most emphasis is placed, if only because the higher grade levels cover more complex and demanding academic subjects and serve more mature students.

Data Sources and Measures

We have created two data sources to provide descriptive information on school structures and classroom practices at different grade levels.

First, new items were added to the Teacher and School Questionnaires for the 1985-86 National Assessment of Educational Progress (NAEP) that cover grouping, staffing and scheduling practices in elementary, middle and secondary grades <2>. Although the public use tapes are not yet available with which to investigate correlates of school practices with 1985-86 NAEP data, we have been able to obtain special tabulations from these data that provide distributional statistics on each school practice item.

Second, we designed and administered a school questionnaire covering grouping, staffing and scheduling practices that was incorporated in the Pennsylvania Department of Education's statewide Educational Quality Assessment (EQA) conducted in elementary, middle and secondary grades in Spring 1986. The school data from our questionnaire have been merged with the student test and questionnaire data and the teacher data routinely collected for EQA, which enables us to investigate the relationships between school demography and school practices and between school practices and both learning environments and student outcomes. Appendix A presents a description of the NAEP and EQA samples and contains a copy of the EQA School Questionnaire.

<2> A researcher from this Center served on the committee at ETS that designed the questionnaires and offered items on grouping, staffing and scheduling that were incorporated into NAEP.

Grade Level Variations in Staffing, Grouping and Scheduling

We first present descriptions using the Pennsylvania EQA data of differences across grade levels in staffing, grouping and scheduling practices. These are followed by national tabulations on the same topics using NAEP data, to verify the representativeness of the Pennsylvania descriptions.

Staffing

The curriculum differences between elementary and secondary grades ordinarily produce two opposite methods of teacher assignments: (1) the self-contained classroom arrangement, usually associated with elementary grades, in which a single teacher gives instruction in all major academic subjects to the same intact class of students, and (2) the departmentalized arrangement, usually associated with secondary grades, in which each teacher presents one academic subject to four or five different classes of students so that any given student receives instruction in different subjects from several different teachers.

Specific advantages and disadvantages have often been cited for each approach (Hillson, 1965, 111-113), even though little scientific evidence exists on the actual effects of these practices on learning environments or student outcomes. In brief, the departmentalized arrangement requires a teacher to specialize -- develop expertise in one subject area -- and to concentrate on daily lesson preparations, which should result in higher quality instruction. On the other hand, because under departmentalization a teacher is more

likely to have a "subject-matter orientation" and students have many different teachers, close and supportive individual teacher-student relations may be more difficult to establish and maintain than in the self-contained situation with its greater emphasis on a teacher's "pupil orientation."

Staffing arrangements that are intermediate to these two poles have been devised to balance the advantages and disadvantages of each extreme and to foster a more flexible and coherent curriculum and instructional package (e.g., Alexander & George, 1981; Bolvin, 1982; Hillson, 1965; Lipsitz, 1977; National Association of Secondary School Principals, 1985; National Education Association, 1963). These arrangements include "mixed" assignments in which teachers teach more than one class in related subject areas -- such as as math and science -- and students receive instruction in major subjects from no more than two or three different teachers. Often a small team of teachers will share the same groups of students, coordinating their instructional program and addressing their special needs (e.g. Armstrong, 1977; Davis, 1971; Sterns, 1976).

Figures 1 and 2 show that extreme staffing arrangements are mostly found at the lower elementary and higher secondary grades, but practices vary at most grade levels and vary greatly at the middle grades. The distributions presented in Figures 1 and 2 are based on responses from Pennsylvania schools, in samples that ranged from about 200 schools at the upper grades to about 450 schools at the lower grades. (See Appendix B for futher details).

Figure 1 shows that about 85 percent of schools with a first grade assign teachers to self-contained classrooms, but the percent declines regularly as the grade level increases and reaches zero percent at grade 7 and above. At the other extreme, departmentalized assignments do not appear until grade 4, and increase regularly to become the dominant teacher assignment practice in grade 7 and above. "Mixed" teacher assignments between the two extremes are found at all grade levels, but reach the highest percent of schools at the middle grades of 5 and 6.

Figure 2 shows similar trends across grades in the number of different teachers that provide academic instruction in the major academic subjects for a typical student during an average week. A typical student has a single teacher in over eighty percent of schools at the first grade level, but the percent in this category declines steadily over the elementary and middle grades until it reaches zero in grade 7 and above. Conversely, in the early elementary grades, a typical student has three or more teachers for major-subjects instruction in less than 20 percent of the schools, but the percent in this category rises in the middle grades to become the dominant student experience in grades 7 and above. Two teachers for a typical student -- the intermediate category -- peaks in percentage at the middle grades. Figure 2 shows that a significant percent of all categories exist at grades 4, 5 and 6, and grade 5 has an almost equal representation of schools in which the typical student receives instruction from 1, 2 and 3 or more teachers.

Scheduling and Grouping

The assignment of students to instructional groups can be considered separately from teacher assignment practices. The number of different groups of classmates that an individual student experiences during a school day is not necessarily tied to the number of different teachers from whom the student receives instruction -- students could remain with the same clasmates throughout the school day whether they receive instruction from a single teacher or several teachers. Some block schedules keep students together for instruction from several teachers: students move as a single group from teacher to teacher throughout the day, or each class of students remains in the same room as teachers shift from location to location as instructional periods change. In other cases, where instructional regrouping of students occurs within a classroom, students may work with different classmates over the course of a school day, even if they are taught by one or two teachers in all subjects.

The actual practices of scheduling and grouping students used at a given school will be affected by local conditions of demography and resources and by educational assumptions about curriculum and resources (Bolvin, 1982; Peterson, Wilkinson and Hallinan, 1984). The local constraints can include size and mix of student enrollment, staff expertise, space and instructional materials, and curriculum regulations of coverage and time. Within these constraints, many schools institute quite complex scheduling and grouping practices to address their educational goals (Alexander & George, 1981; Heller, 1971; NEA, 1963; Shane, 1960; Slavin, 1986).

The first grouping of students for instruction is usually based on age and grade level <3>. Further grouping is usually carried out by using an indicator of a student's ability or present academic achievement to create more homogeneous student groups for instruction.

Specific advantages and disadvantages have been cited for homogeneous vs. heterogeneous grouping of students (Braddock et al., 1984; Findley & Bryan, 1971; Hillson, 1965; Peterson, Wilkinson, and Hallinan, 1984; Slavin, 1986). Homogeneous grouping of students is assumed to permit more appropriate instruction that is better targeted to the actual needs of students, which will more effectively motivate students to work on tasks that are neither too difficult nor too easy for them. On the other hand, homogeneous grouping practices may not reduce student heterogeneity enough to provide better instruction, may incorrectly assign many students if based on single or infrequent criteria, or may stigmatize students and teachers in bottom groups with low expectations and inferior resources. In addition, a heterogeneous mix of students may offer important unique learning opportunities to all individuals in the class.

<3> Scheduling of students according to age and grade level remains the dominant practice in American public schools, even though proposals for non-graded, continuous-progress, and flexibly-scheduled student assignments are well developed and have been around for many years. Statistics in the Department of Education's Condition of Education report (1985, Table 1.6) indicate that a tiny fraction of public schools and enrollments cannot be classified in conventional grade-level terms.

Our school survey covered three aspects of scheduling and grouping students at each grade level: the number of different classmate groups for a typical student, use of between-class assignments to create homogeneous classes, and use of within-class assignments to create homogeneous instructional groups.

We asked school principals to report which of three scheduling practices is used in each grade to define an individual's classmates: (a) students stay with the same classmates for all academic subjects, (b) students remain with the same class for most academic subjects but are regrouped with students from other classes for one or two academic subjects (for example, regrouped for Reading and/or Math) or (c) students change classmates for all or most academic subjects. The survey results on this question are graphed in Figure 3.

Figure 3 shows some regrouping for the majority of students in all but the earliest elementary grades, and shows distinctive upward trends across the grades in the number of regroupings of classmates experienced by a typical student. In the first grade, nearly 80 percent of schools report that students stay with a single class for all instruction, and about 20 percent report that students are regrouped for 1 or 2 subjects. By grade 4, about fifty percent of the schools report either no regrouping at all or regrouping for 1 or 2 subjects. After grade 6, changing classes to regroup for most subjects emerges as the most frequent scheduling practice.

However, the students who stay with the same classmates all day may have been assigned to that class as part of a heterogeneous or

homogeneous between-class grouping practice. Figure 3 does not show whether ability- or achievement-grouping criteria were used for the classes that remain intact all day. In Figure 4, we divide the classes that remain together for all subjects into those that did not use student ability or achievement for class assignments (labeled "one mixed class") and those that did use student assignments to create more homogeneous classes (labeled "one tracked class"). Thus, Figure 4 uses the same data as Figure 3, but provides a further breakdown of the single intact classes <4>.

Figure 4 shows that from grade 1 to grade 6, more of the all-day intact classes are heterogeneous than homogeneous, although even at these elementary grade levels about one-third or more of the all-day intact classes are tracked. Considering all categories of classroom groupings in grades 1 through 6, Figure 4 shows that "one mixed class" and "regrouping for 1 or 2 subjects" are the most frequent practices, with the first type declining at the expense of the second as one moves from grade 1 to 6. But beginning at grade 7, the all-day intact classes are most likely to be tracked, and changing classes each period to regroup for most subjects becomes the most frequent assignment practice as one moves from grade 7.

<4> We used responses to item 8 on our survey to make this breakdown. Schools could answer "none" to the question "For which academic subjects are students assigned to homogeneous classes on the basis of similar abilities or achievement levels."

Grouping Between-class and Within-class

Homogeneous instructional groups can be established through between-class or within-class assignment practices. In each case, homogeneous grouping practices can be applied separately to each subject, using student performance records in a particular academic area as the basis for instructional assignments. On our survey, we asked one set of questions about between-class grouping to identify the particular subjects at each grade in which students are assigned to homogeneous classes on the basis of similar abilities or achievement levels. Besides identifying particular subjects, a school could answer "none" to this question to indicate that only heterogeneous class groupings are used in the grade, or a school could answer "all" to indicate that separate tracks or curriculum are established. On our survey, we also asked a different set of questions about within-class grouping, to identify the particular subjects at each grade in which most teachers divide their class into smaller ability groups for instruction.

Figure 5 shows, at each grade level, the percent of schools that use homogeneous between-class grouping and homogeneous within-class grouping in at least one major subject area. Within-class grouping is used more at the lower grades and between-class grouping is used more at the upper grades, but each type of grouping appears frequently at every grade level. Within-class ability grouping is used in more than 90 percent of the elementary schools up through grade 5 and then tapers off sharply, especially in grade 7 and above. But within-class ability grouping -- even at its lowest point at grade 9

on our graph -- is still reported in use at over one-third of the schools. Similarly, even though between-class grouping reaches 90-percent levels in schools at grades 7, 8 and 9, it is used in the majority of schools at the elementary grades as well <5>.

Figure 6 shows the subjects in which between-class grouping is most used at each grade level. Tracking in all subjects reaches high proportions in grade 7 and beyond. Between-class grouping in math increases in use with each succeeding grade. Homogeneous classes for reading/English are more prevalent than for math at all elementary grade levels, but decrease in grades 7, 8 and 9, where between-class grouping in all subjects probably provides the equivalent homogeneity.

Figure 7 shows the analogous picture for within-class ability grouping. This is a predominant practice in elementary school reading instruction (ability groups within class during reading periods), but occurs at a much lower level for elementary school math instruction.

Interrelationships between School Practices

The Pennsylvania EQA data can be used to examine the interrelationships of school practices across grades 1 to 9, and to provide a summary statistic of the effect of grade-level on differences in each school. Thus the number of cases in this file is equal to the

---

<5> The percent of elementary schools using between-class grouping is probably a lower bound on the number who would use this practice if they did not have constraints of school size. This point could be clarified by further analyses that obtain estimates of use after eliminating the smaller elementary schools that have only one class per grade.

sum of the number of EQA schools at each grade from 1 to 9 (n=3238).

Table 1 presents the intercorrelation matrix of school practices, grade level, size of enrollment in the grade, and SES of students in the school <6>. The first three variables in the Table are separate categories of the same variable. Although the intercorrelation between these categories will necessarily be negative, each category is shown in Table 1 because the intercorrelation with other variables is of interest.

The following relationships are noteworthy in Table 1:

1. Grade level is a strong correlate of all school practices, ranging from .300 to .759 depending upon the measure (see row 8). Teaching assignment is most strongly associated with grade level, as reflected by correlation coefficients of .648 for "departmentalization," -.621 for "self-contained classes," and .759 for number of teachers per student. Grade level is more highly correlated with the use of within-class ability grouping (-.435) than with the use of between-class grouping or tracking (.300) or with the regrouping of student classmates for different periods of instruction (.339). This means that teacher's subject-matter specialization is a practice very closely tied to grade level, but between-class homogeneous grouping of students is a practice often used at all

---

<6> All measures are taken from the Principal Survey instrument shown in the Appendix. Grade level takes values of 1 through 9. Size of enrollment in the grade is estimated by the total school enrollment reported by the Principal divided by the number of different grades in the school. Socio-economic status (SES) of students in the school is estimated by a combination of Principals' reports of the percent of students in the school who receive free-lunch or reduced-price lunch, or participate in Chapter 1 programs.

grade levels although used somewhat more frequently at the higher grade levels (see also Figures 4 and 5).

2. Between-class grouping and within-class grouping may be alternate school practices for creating homogeneous instructional groups (intercorrelation of -.116) although between-class grouping is often used at each grade level and within-class grouping is infrequently used in secondary grades.

3. The average socio-economic status (SES) of students in a school is not a strong correlate of staffing, scheduling or grouping practices used in a school.

4. Size of school does not account for the observed grade level relationships. Enrollment size is associated with grade level (correlation is .481), which reflects the well-known national practice of smaller neighborhood elementary schools that feed larger middle or junior high schools that feed even larger high schools. School size will sometimes have an effect on school practices independent of grade level, because it usually takes multiple classes at the same grade level in the same school to use certain between-class tracking and teacher assignment practices.

Table 2 reports the relationships of grade level to each school practice with and without statistical controls on school size and SES. This table shows that grade level is strongly related to school staffing, scheduling and grouping practices, even after differences in school size across the grades are taken into account. Although there is some reduction in the relationships when these

statistical controls are applied, the reductions are not substantial.

Comparison with National Statistics

We obtained special tabulations from the 1985-86 National Assessment of Educational Progress (NAEP) in order to check on the national representativeness of the patterns across grade levels that we found in our Pennsylvania data. Table 3 gives tabulations of teachers' responses to NAEP questions on staff assignments in their school. Table 4 gives tabulations of principals' responses to NAEP questions on staffing and grouping practices. These tabulations are presented graphically in Figures 8, 9, 10, 11 and 12.

Because NAEP tests three different age-grade groups of students only, information was obtained for school practices in selected grades only. NAEP Principals were asked about school practices for grade 3, grade 7 and/or grade 11, depending upon the grades in their school. Likewise, NAEP Teachers were included in the sample only if they provided instruction in one of the NAEP test areas to the sampled students in grade 4, grade 8 and/or grade 11 <7>.

The same patterns of school practices are reported by NAEP respondents as we found in our Pennsylvania data, although the survey questions are not precisely the same and the actual percentages do not match exactly. Figures 8, 9, 10 and 11 present the NAEP data on schools' staffing practices, and show that departmentalized staffing is infrequent in the elementary grades but gradu-

---

<7> In 1985-86, NAEP tests covered the subject-matter areas of reading/English, science, mathematics and history.

ally replaces single-teacher self-contained classrooms as the grade level moves up from elementary to middle to secondary. This pattern is shown in Figure 8 in terms of teachers' reports on staffing, in Figure 9 in terms of principals' reports on staffing, in Figure 10 in terms of teachers' reports on their specialization of instructional assignments, and in Figure 11 in terms of principals' reports of when specialized teachers are used. Figure 12 presents the NAEP data on between-class ability grouping and shows this practice to occur frequently in middle grades and very frequently in secondary grades, which is also consistent with our findings using EQA data.

Table 5 makes more precise comparisons between the results from the NAEP data and from the Pennsylvania data. Comparisons are shown separately in elementary, middle and secondary grades on the survey question about staffing, which is the most closely matched question in the two data sources. The trends across grades are the same in both data sets. However, at the elementary level EQA shows a much higher percent in the intermediate category between self-contained and departmentalized; at the middle level EQA shows much less self-contained and more departmentalized and intermediate staffing. We cannot match the same grades in each survey at the secondary level, but it appears that EQA shows less self-contained grades and more intermediate.

The main reason for these discrepancies may be the inconsistency between the surveys in the intermediate staffing category. Each survey's staffing question has the same response categories of "self-contained" and "departmentalized" and uses the same defini-

tions for these response categories. Each survey also has a response category in-between the other two categories, but different terms and definitions are use for this intermediate category. In Pennsylvania EQA, the intermediate response category is "mixed -- teachers teach more than one class and more than one subject area." In NAEP, the intermediate response category is "team teaching -- two or more teachers teach a group of students for all or a significant part of the day." The NAEP intermediate category overlaps with its "departmentalized category" and may be overlooked by respondents who chose the latter category. Also, the EQA "mixed" staffing category includes many practices in addition to the "team teaching" used in NAEP (such as semi-departmentalized, where teachers specialize in broad areas but do not necessarily teach in teams). Thus the EQA survey finds a much higher percentage of schools in the intermediate category at each grade level than NAEP.

A second reason for discrepancies may be an underlying difference in the two samples. EQA has fewer K-8 and private schools than NAEP that continue to use single-teacher self-contained practices in the upper elementary and middle grades. Thus, EQA probably somewhat overestimates the degree of decline across grade-levels in self-contained classes.

Sources of Variation in School Practices At Each Grade Level

We have reported variations at each grade level in school practices of staffing, scheduling and grouping. Our next analyses examine whether certain kinds of schools are more likely than others to deviate from the typical practices at each grade level, and what school factors help explain variations at each grade level. Our Pennsylvania data are well suited for these purposes because they combine information on school practices with student, teacher and principal reports of school demography and school goals. We will focus on grades 4, 6, 7 and 9, which are the grades in which Pennsylvania collected student test, attitude, and background data.

Grade-span

The issue of grade-span -- what is the lowest and highest grade in a school -- has been of great interest for middle level education in recent years. A great deal has been written about the possible advantages and disadvantages of particular grade spans for the learning environments of early adolescents (e.g. Education Research Service, 1980), and some scientific studies have identified how student developmental patterns may be affected by the grades in which other students are enrolled in their school (Blyth, Simmons & Bush, 1978; Blyth, Hill & Smyth, 1981; Simmons et al., 1979; Slavin & Karweit, 1982). U.S. Department of Education statistics shown in Figure 13 indicate the shift over the past years from a 7-9 "junior high school" grade-span to a 6-8 "middle school" grade-span, the corresponding decline of 1-6 grade elementary schools in favor of

1-5 grade-spans, and the decline of 10-12 grade high schools in favor of 9-12 and 7-12 grade-spans. This figure also shows the additional variety of grade-spans in the nation's elementary, middle and secondary schools.

Because we found regular trends across the grades in school practices, with the lowest grades most reflecting "pupil orientation" practices and the highest grades most reflecting "subject-matter orientation," it is reasonable to expect that the practices in any given grade will be influenced by the highest and lowest grade of the school in which it is located. Thus, for example, we know that there is about an 80 percent chance that departmentalization is used for grade 9 students, so we expect that schools with 9 as the highest grade will exert a pressure on the lower grades in the school to also be departmentalized.

The Pennsylvania data have a good distribution of schools across different grade-spans, so we can study whether grade-span is related to school practices for a particular fixed grade. For schools with grade 4, we have significant numbers of cases with grade-spans of K-4, K-5, and K-6. For schools with grade 6, we have cases with grade-spans of K-6, 4-8, and 6-8. For schools with grade 7, we have cases with grade-spans of 5-8, 7-9, and 7-12. And for schools with grade 9, we have many schools in grade-spans of 7-9, 7-12, and 9-12.

Table 6 shows how school practices of staffing, scheduling and grouping at each grade level may be related to the grade-span of the school in which that grade level is located. The top panel of Table 6 reports the average school practices at Grade 4 for two groups of

schools with different grade spans (K to 4 or K to 5; and K to 6). The next panel of Table 6 reports averages for Grade 6 for two groups of schools with different grade spans (K to 6; and 4 to 8 or 6 to 8). This is followed by a panel of statistics for Grade 7 subdivided into two groups (grade span 5 to 8; and 7 to 9 or 7 to 12). The bottom panel of Table 6 shows three subgroups for Grade 9 (grade-spans 7 to 9, 7 to 12 and 9 to 12).

Table 6 shows that the grade-span of the school is related in an explainable way to the staffing, scheduling and grouping patterns used in Grades 4 and 6, but not in Grades 7 and 9. In Grades 4 and 6, schools with the lower top grade are more likely to resemble the typical elementary school (self-contained or mixed staffing, limited regrouping of students, less between-class grouping and more within-class grouping), while schools with the higher top grade are more likely to resemble the typical secondary school (departmentalized, extensive regrouping of students, more between-class grouping and less within-class grouping).

Grade-span and staffing: The distribution of staffing patterns at each grade level reported in Table 6 shows the effect of grade-span. Grade 4 practices in K to 4 or K to 5 schools are much more likely to assign teachers to self-contained classes than in K to 6 schools (71.5% vs. 45.9%), while Grade 4 staffing practices in K to 6 are much more likely to be mixed or departmentalized than in schools where the top grade is less than 6 (44.4 and 9.7 vs. 25.3 and 3.2).

The same direction of differences can be seen for Grade 6 practices in Table 6. There is a much higher percentage of Grade 6 teacher assignments to self-contained classes when the top grade in the school is 6 than when the top grade in the school is 8. And when Grade 6 teaching assignments are made in schools that span to Grade 8, we observe a much higher percentage of departmentalized and mixed arrangements.

The same influence of grade span is not evident for Grade 7 and Grade 9 staffing patterns. Self-contained classes with single teachers are not reported at these grade levels, and there is no tendency for more extensive departmentalization or less mixed staffing for Grades 7 and 9 in schools with higher top grades.

The same staffing differences can be seen in the average number of teachers per student reported in Table 6. Large differences are shown in Grades 4 and 6 -- the typical student receives instruction from more different teachers when the school spans a higher grade level. There is even a small tendency in the same direction for Grade 7 staffing practices -- the average student has more than 4.70 different teachers in 5 to 8 schools and 4.89 different teachers in schools that span to Grade 12. At Grade 9 all students receive instruction from about the same high number of different teachers.

Grade-span and scheduling: Table 6 shows grade-span effects on scheduling practices in Grades 4 and 6 that would be expected from what we have just observed in the use of self-contained classes. At Grade 4, schools with higher top grades are less likely to have students remain with the same classmates for all subjects and more

likely to regroup for a few or most subjects. This also applies at Grade 6. At Grade 7, the scheduling differences in Table 6 for schools with different grade-spans are not as large as at Grade 4 or Grade 6 and the differences cannot be explained as a pull toward secondary school practices in schools with higher top grades. Similarly, although some percentage differences of scheduling practices are large at Grade 9, they do not follow any clear pattern.

Grade-span and homogeneous grouping: Table 6 also shows that Grade 4 and Grade 6 grouping practices vary depending upon the school grade-span. At each of these grades, schools with lower top grades practice less between-class grouping and more within-class grouping. Again, the differences at Grades 7 and 9 are not as large and do not make sense in terms of schools with the higher top grades using grouping patterns most like secondary schools.

Grade-span differences, controlling for school size and SES. Table 7 shows that school size and SES composition are often related to school organization practices, but controlling on these factors does not entirely account for the grade-span effects on school organization practices we have observed in the lower grades without these controls. Table 7 shows that the grade-span effects in Grade 4 and 6 remain statistically significant when controls are made on school size and SES, but most of the grade-span differences in Grades 7 and 9 are not statistically significant with these same controls.

Table 7 presents the regression coefficients and test statistics from multiple regression analyses at each grade level of each school practice on three independent variables (highest grade in the school, total enrollment in the relevant grade, and average parent's education as reported by students in the relevant grade of the school). Thus each row of Table 7 presents the coefficients estimated from a separate multiple regression analysis.

School size is measured by the total enrollment in the particular grade being analyzed in Table 7. School socio-economic status (SES) composition is measured by the parents' education of the average student in the grade.

Table 7 shows that school size is often significantly related to school organization practices (t statistic values of 2.0 or more indicate results which are significant with no more than .05 probability of error).

We find larger schools to be less likely to use self-contained staffing rather than mixed or departmentalized in grades 4 and 6, and less likely to be mixed rather than departmentalized in grades 7 and 9. Accordingly, we also find larger schools to assign a greater number of different teachers to each student in grades 4, 6 and 7. Larger schools schedule more regrouping of students, more between-class tracking and less within-class ability grouping, especially in the lower grades.

School SES is less consistently related to different school organization practices; higher SES schools in all grades schedule

more regrouping of students (perhaps because they offer more varied or specialized courses), and in the lower grades use more tracking and less self-contained classroom staffing.

Even with these relationships with school size and school SES, school organization practices remain influenced by grade-span differences in grades 4 and 6. Table 7 shows that grade span (as measured for each separate grade and analyzed by the highest grade in ther school) remains statistically significant (t value of 2.0 or more) in analyses that control for school size and SES. In particular, Grade 4 and Grade 6 classes located in schools with higher top grades are less likely to be self-contained or to use within-class ability grouping, and are more likely to be mixed or departmentalized, to have a greater number of different teachers giving instruction to each student, and to use between-class grouping or tracking. On the other hand, Table 7 shows that the staffing and grouping practices of Grade 7 and Grade 9 classes are not significantly influenced by the highest grade level in their school, when school size and SES are taken into account.

Discussion

How well do our data fit the idea that an underlying continuum of "student orientation" versus "subject matter orientation" can be used to describe a school's decisions about its staffing, scheduling and grouping practices?

Our EQA and NAEP survey data give empirical confirmation to long held impressions about differences between elementary, middle and secondary grades in practices of staffing, scheduling and grouping, but also show that there is overlap in practices across the grades. Thus elementary grades are much more likely to assign teachers to self-contained classes with heterogeneous student enrollments, in which within-class ability grouping is used to focus instruction in reading and sometimes in math to match individual student differences. Because grouping is within-class and controlled by a single teacher, it can be kept flexible to meet the needs of individual students who demonstrate short periods when they spurt ahead or lag behind.

At the other end of the grade continuum, secondary students are usually in departmentalized schools that establish separate tracks and/or classes in which enrollment is determined by students' measured academic performance, and in which between-class groupings usually remain static for the entire school term or school year. The middle grades have a nearly equal representation of schools using each major staffing, scheduling and grouping practice, including intermediate and mixed practices such as small teams of teachers using semi-departmentalization and both between- and within-class groupings.

Regular trends in staffing, scheduling and grouping practices are evident at each grade increment from grade 1 to grade 9. Thus we found grade-level to be a very strong predictor of a school's practices, even when school size and student background are taken

into account, especially at the extremes of the elementary-secondary grade range. From this, we conclude that it is useful to think of an underlying continuum that influences how a school will staff, schedule, and group for instruction, and it is reasonable to label the opposite poles as a "student orientation" and "subject orientation" to match the differences across the grades in student maturity and curriculum complexity.

On the other hand, if such differences in orientation do underlie school practices, we find sufficient evidence that many schools are seeking balances between the poles (especially in the middle grades) or adjusting to unusual local situations. At each grade level we found some schools using practices that were more typical of schools at other levels, such as elementary grades using departmentalization and middle or secondary grades using within-class ability grouping. And between-class homogeneous grouping was not an infrequent practice at any grade, even though it was more common in the upper grades.

Additional evidence about the usefulness and limitations of using a "student orientation" versus "subject orientation" continuum can be drawn from our analyses of the influence of a school's grade-span on practices for particular grades. We do find that the highest grade present in a school tends to influence the practices at the lower grades. The higher the final grade is in a school, the less likely each grade in that school will be self-contained, block scheduled and grouped within-class, and the more likely each grade in that school will be departmentalized and tracked by subject or program.

We speculate that the influence of grade span may reflect the numerical strength of elementary-trained or secondary-trained staff in the school and the orientations each group brings toward student needs and pedagogy. Further research will be needed to see if the grade-span effect on practices in all grades of a school is due to whether the principal and administrative staff were primarily trained for elementary or secondary grades, and whether the mix of teachers in the school favors elementary-trained or secondary- and subject-matter-trained. Evidence that grade-span effects can be explained by the mix of staff training origins would lend further support on an underlying continuum of "student orientation" versus "subject-matter" orientation.

REFERENCES

Alexander, W.M., & George, P.S. (1981). The exemplary middle school. New York: Holt, Rinehart & Winston.

Anderson, R.H. (1973). Organizing and staffing the school. In J. Goodlad & H. Shane (Eds.), The elementary school in the United States: Seventy-second yearbook of the national society for the study of education. Chicago: University of Chicago Press.

Armstrong, D.G. (1977). Team teaching and academic achievement. Review of Educational Research, 47, 65-86.

Blyth, D.A., Simmons, R.G., & Bush, D. (1978). The transition into early adolescence: A longitudinal comparison of youth in two educational contexts. Sociology of Education, 51, 149-162.

Blyth, D.A., Hill, J.P., & Smyth, C. (1981). The influence of older adolescents: Do grade level arrangments make a difference in behaviors, attitudes and experiences? Journal of Early Adolescence, 1, 85-110.

Bolvin, J.O. (1982). Classroom organization. Encyclopedia of educational research, 265-274. New York: Macmillan.

Borg, W.R. (1965). Ability grouping in the public schools: A field study. Journal of Experimental Education, 34, 1-97.

Bossert, S.T. (1979). Task and social relationships in classrooms: A study of classroom organization and its consequences. New York: Cambridge University Press.

Braddock, J.H., Crain, R.L., & McPartland, J.M. (1984). A long-term view of school desegregation: Some recent studies of graduates as adults. Phi Delta Kappan, 66, 259-64.

Davis, H.S. (1971). Team teaching. Encyclopedia of education. 89-94. New York: Macmillan.

Education Research Service, Inc. (1983). Organization of the middle grades: A summary of research. Arlington, VA: Author.

Findley, W.G., & Bryan, M. (1971). Ability grouping: 1970 status, impact and alternatives. Athens, GA: Center for Educational Improvement, University of Georgia. (ERIC No. ED 060 595).

Heathers, G. (1969). Grouping. In R.L. Ebel (Ed.), Encyclopedia of eduational research (4th ed.), 559-570. New York: Macmillan.

Heller, M.P. (1971). Scheduling. Encyclopedia of education, volume 8, 13-18. New York: Macmillan.

Hillson, M. (1965). Change and innovation in elementary school organization. New York: Holt, Rinehart & Winston.

Keefe, J.W., Clark, D.C., Nickerson, N.C., & Valentine, J. (1983). The middle level principalship, volume II: The effective middle level principal. Reston, VA: National Association of Secondary School Principals.

Lipsitz, J. (1977). Growing up forgotten: A review of research and programs concerning early adolescence. Lexington, MA: Lexington Books.

Lipsitz, J. (1984). Successful schools for young adolescents. New Brunswick, NJ: Transaction Books.

National Association of Secondary School Principals. (1985). An agenda for excellence at the middle level. Reston, VA: Author.

National Education Association. (1963). Planning and organization for teaching. Washington, DC: Author.

National Education Association, Research Division. (1968). Ability grouping. Research Summary 1968-S3. Washington, DC: Author.

Peterson, P.L., Wilkinson, L.C., & Hallinan, M. (Eds.). (1984). The social context of instruction. New York: Academic Press.

Reinhartz, J., & Beach, D.M. (1983). Improving middle school instruction. Washington, DC: National Education Association.

Shane, H.G. (1960). Grouping in the elementary school. Phi Delta Kappan, 41(7), 313-319.

Simmons, R.G. et al. (1979). Entry into early adolescence: The impact of school structure, puberty, and early dating on self-esteem. American Sociological Review, 44, 948-967.

Slavin, R.E., & Karweit, N.L. (1982). School organizational vs. developmental effects on attendance among young adolescents. Paper presented at the annual meeting of the American Psychological Association, Washington, DC.

Slavin, R.E. (1986). Ability grouping and student achievement in elementary schools: A best-evidence synthesis. Report No. 1. Center for Research on Elementary and Middle Schools, Johns Hopkins University.

Sterns, H.N. (1976). Team teaching: Cooperative organizational concept. In S.E. Goodman (Ed.), Handbook on contemporary education. New York: R.R. Bowker.

Valentine, J., Clark, D.C., Nickerson, N.C., & Keefe, J.W. (1981). The middle level principalship, volume II: A survey of middle level principals and programs. Reston, VA: National Association of Secondary School Principals.

FIGURE 1
Teacher Assignments, by Grade Level

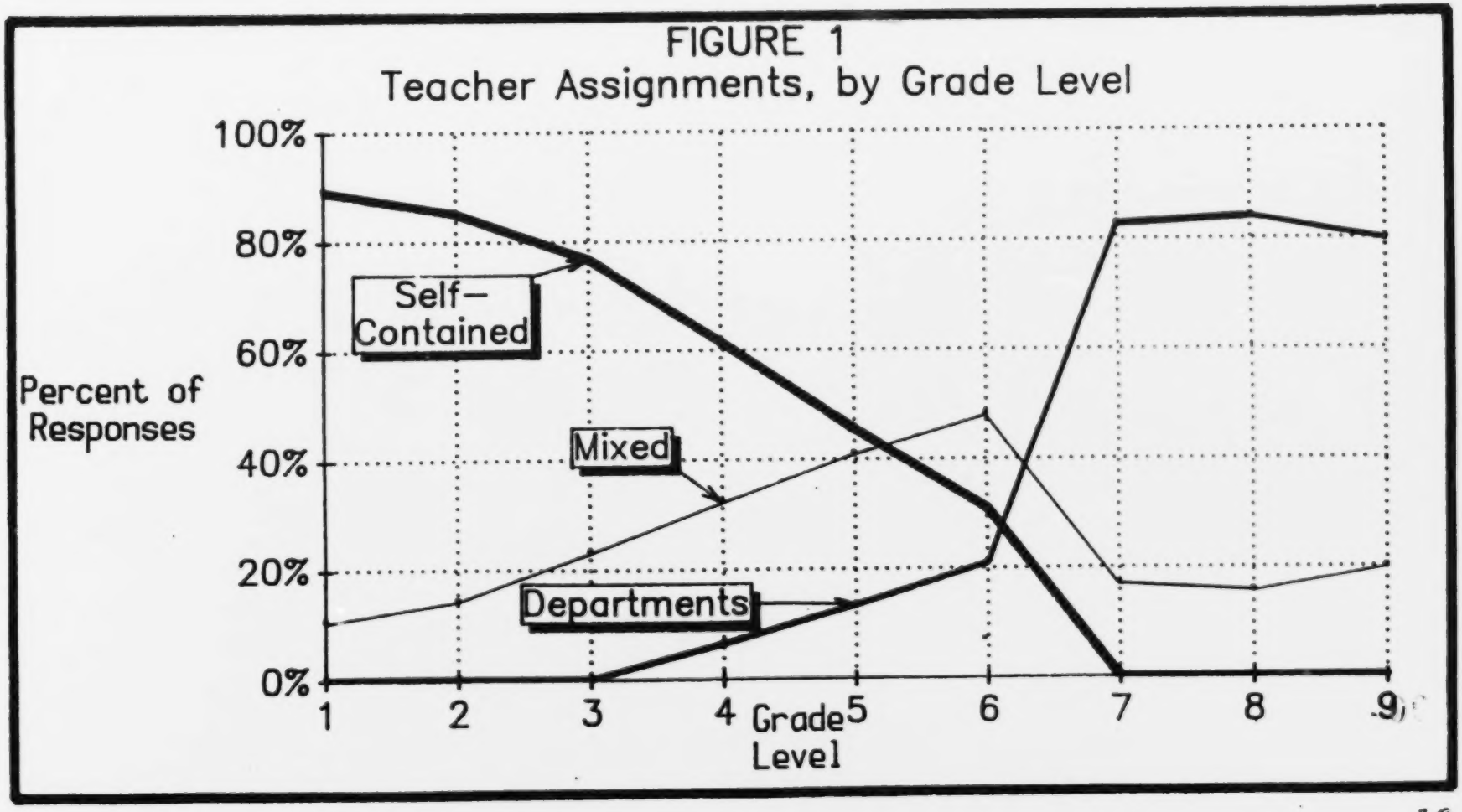


FIGURE 2

Number of Different Teachers per Student, by Grade Level

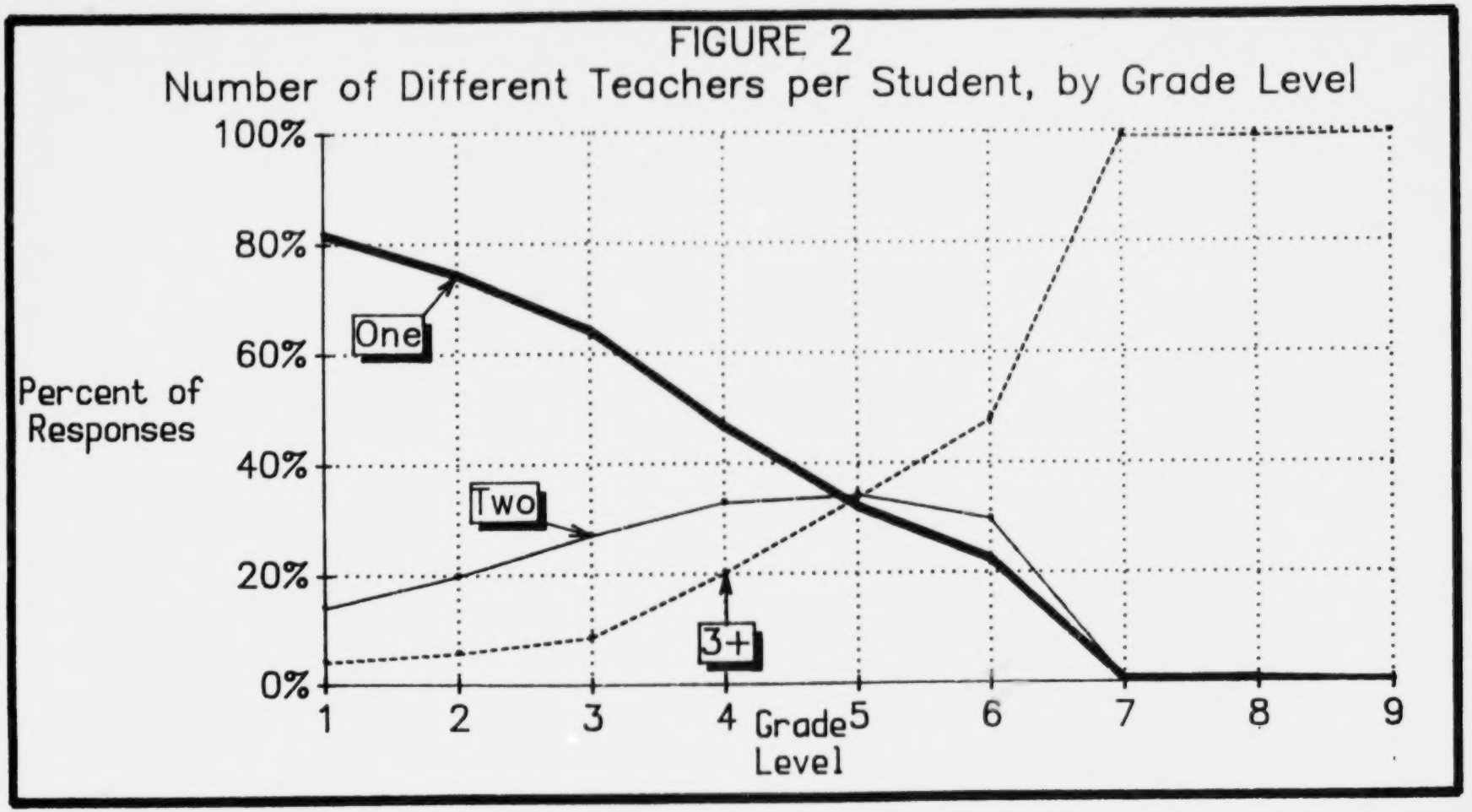


FIGURE 3

Number of Classgroups per Day, by Grade Level

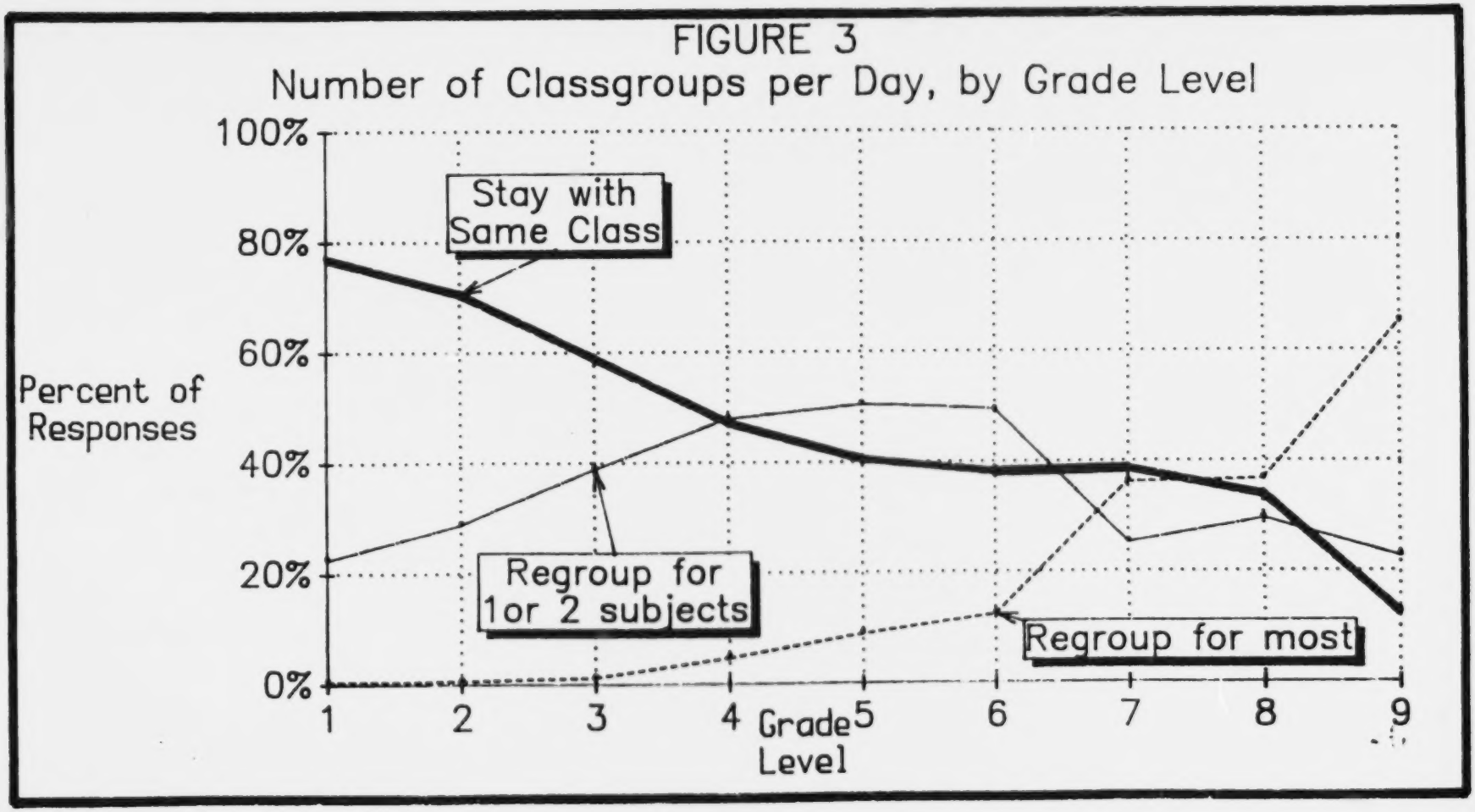


FIGURE 4: Classroom Groupings, by Grade

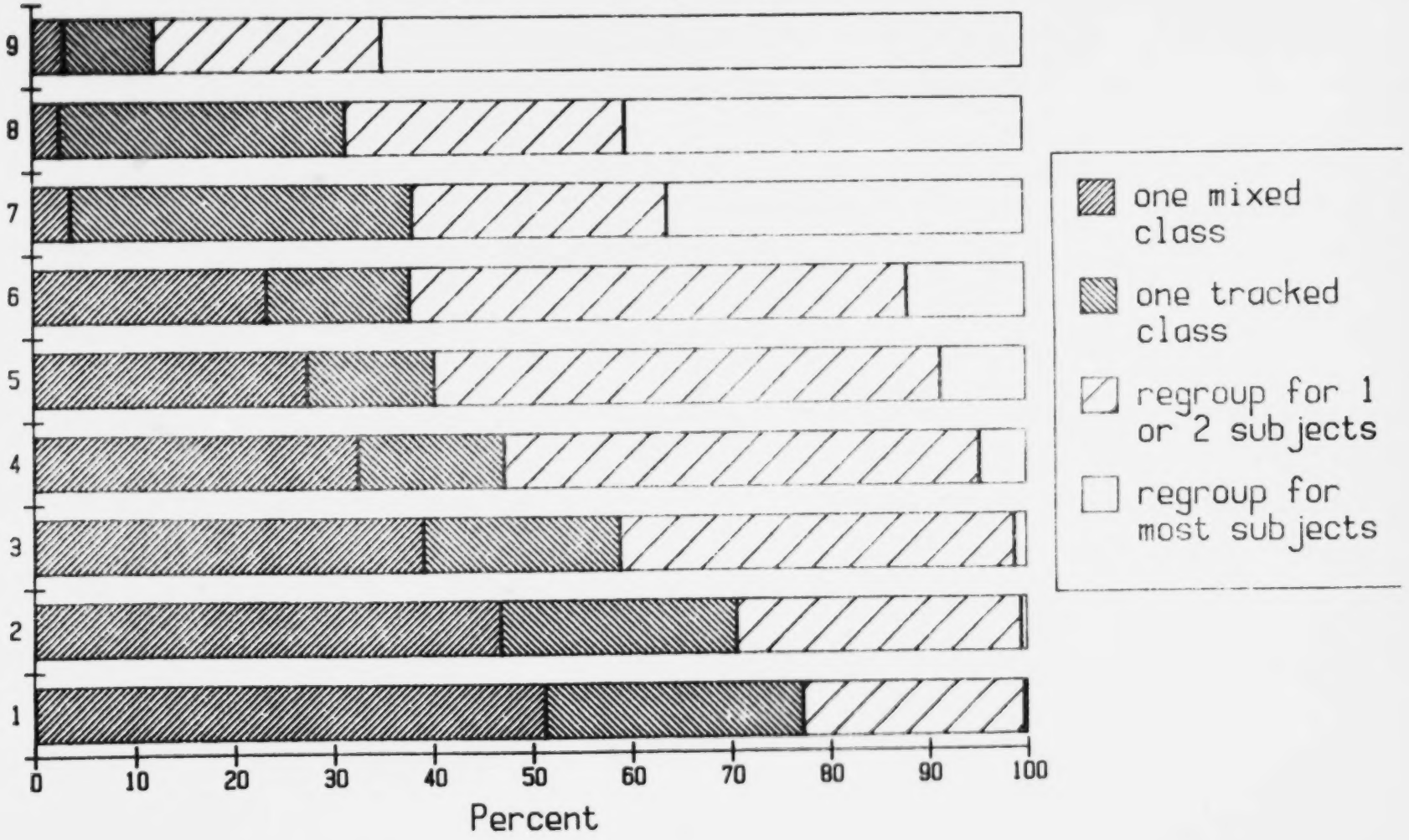


FIGURE 5: Use of Between-Class Tracks or Within-Class Ability Groups, by Grade Level

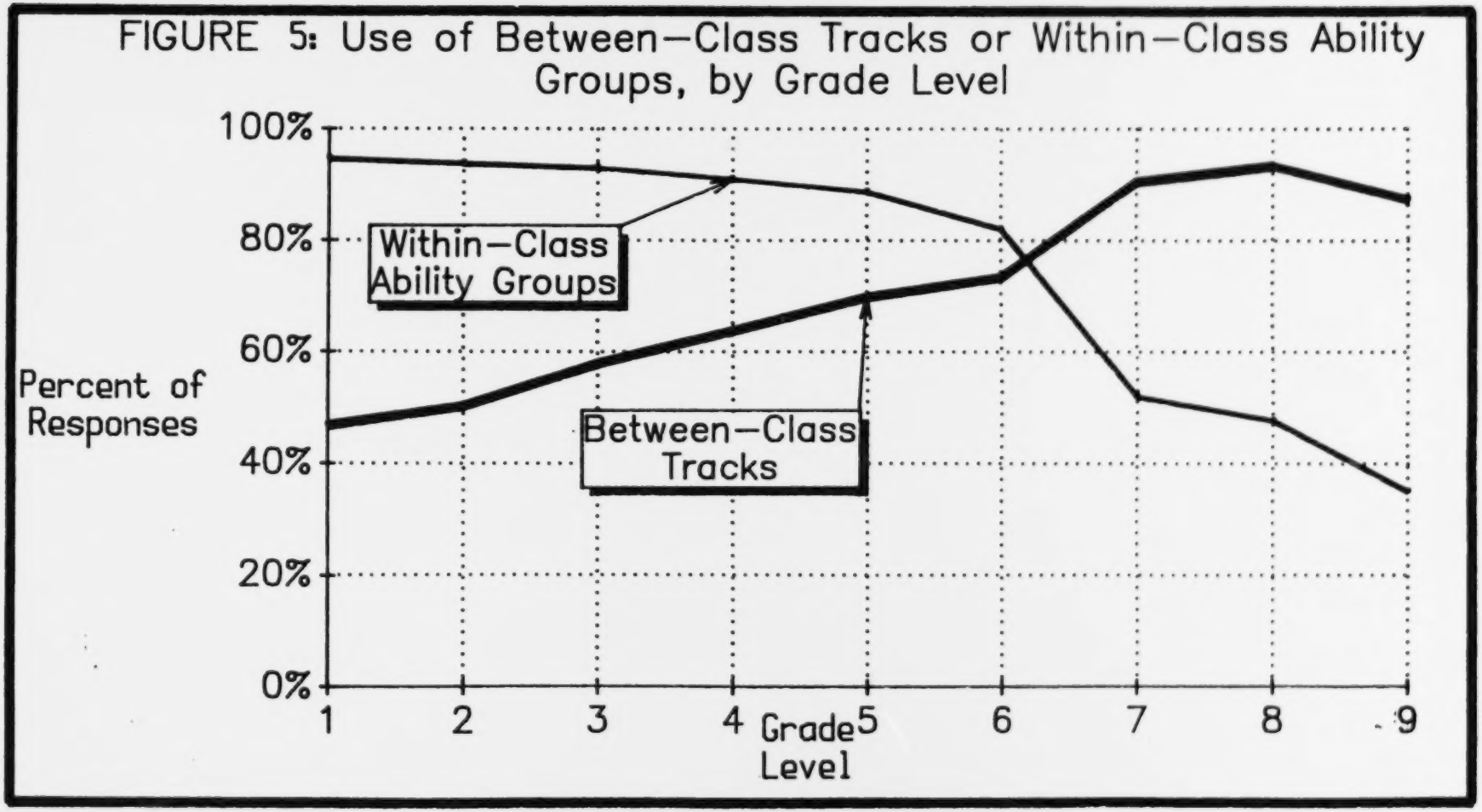


FIGURE 6

Between—Class Homogeneous Grouping By Subject and Grade

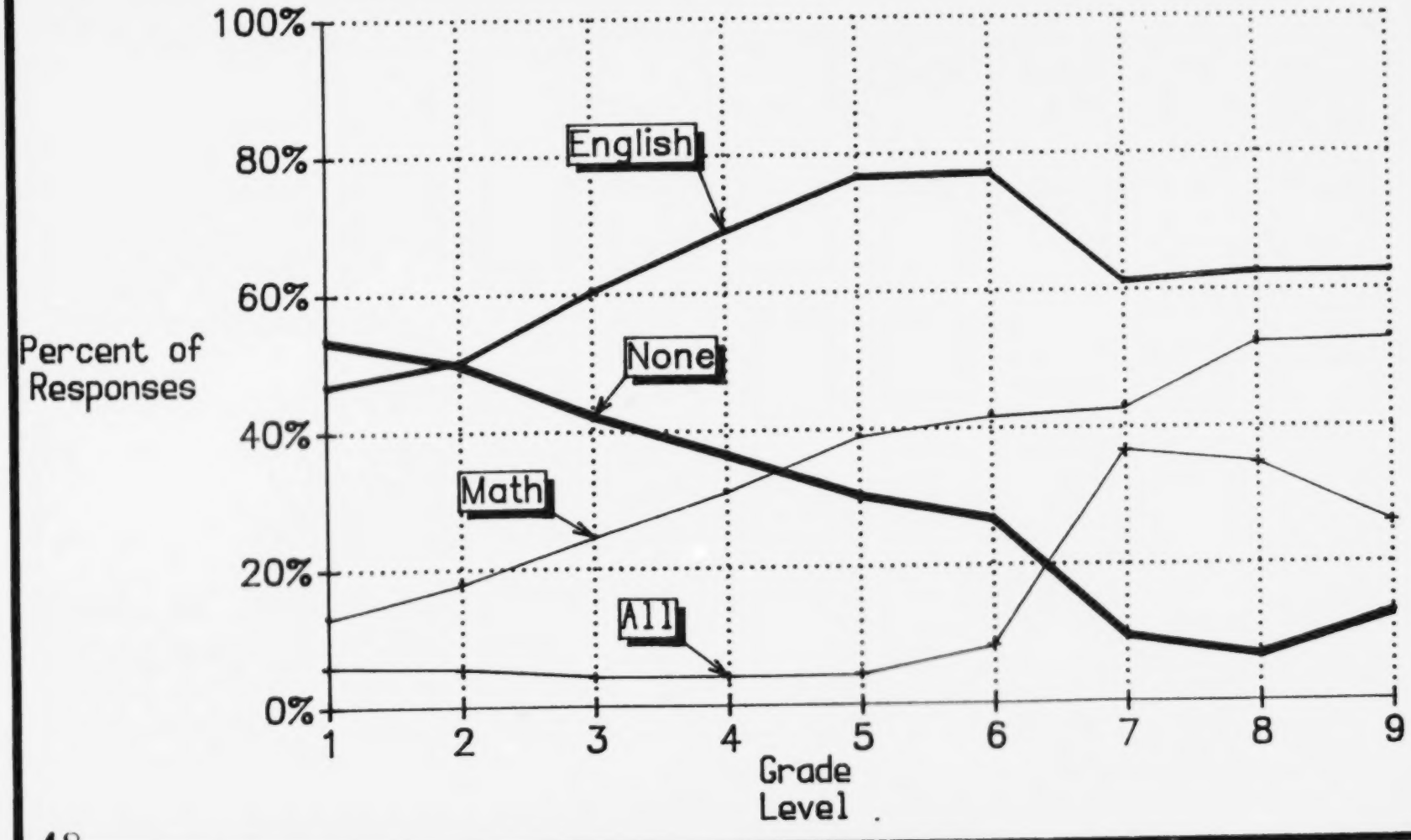


FIGURE 7
Within—Class Ability Grouping By Subject and Grade

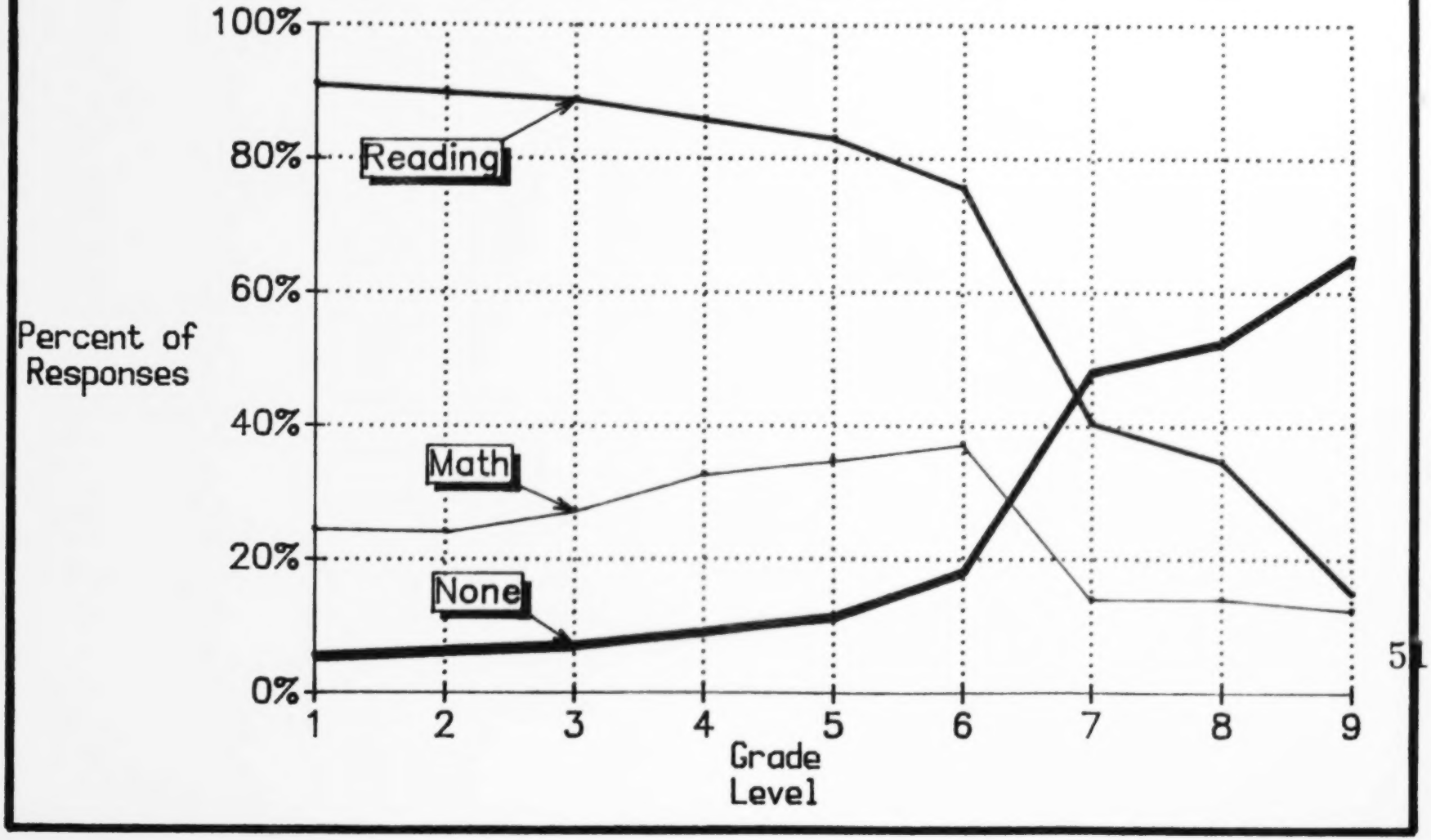


FIGURE 8: National Teacher Assignments, by Grade

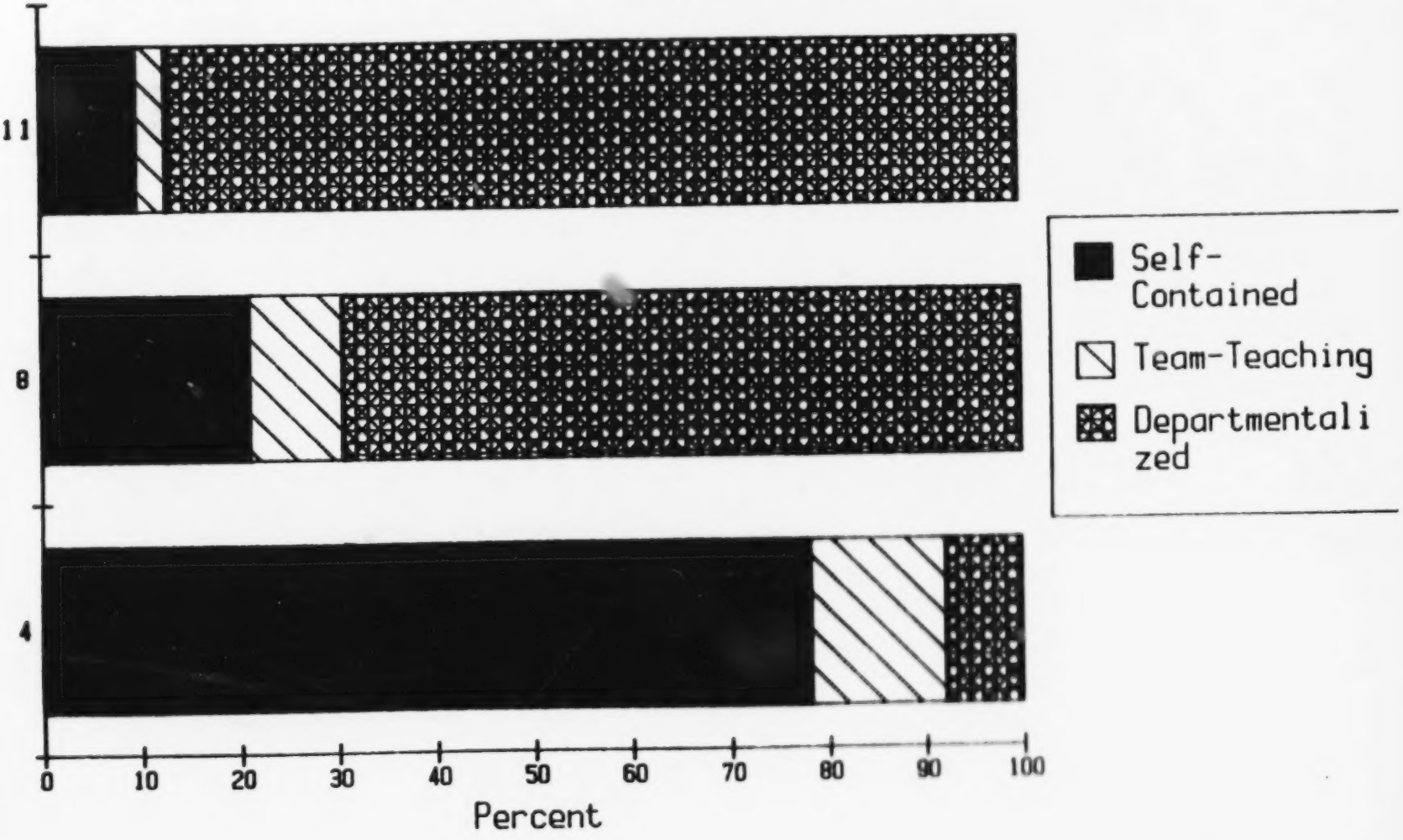


FIGURE 9: National Principal Reports of Teacher Assignments, by Grade

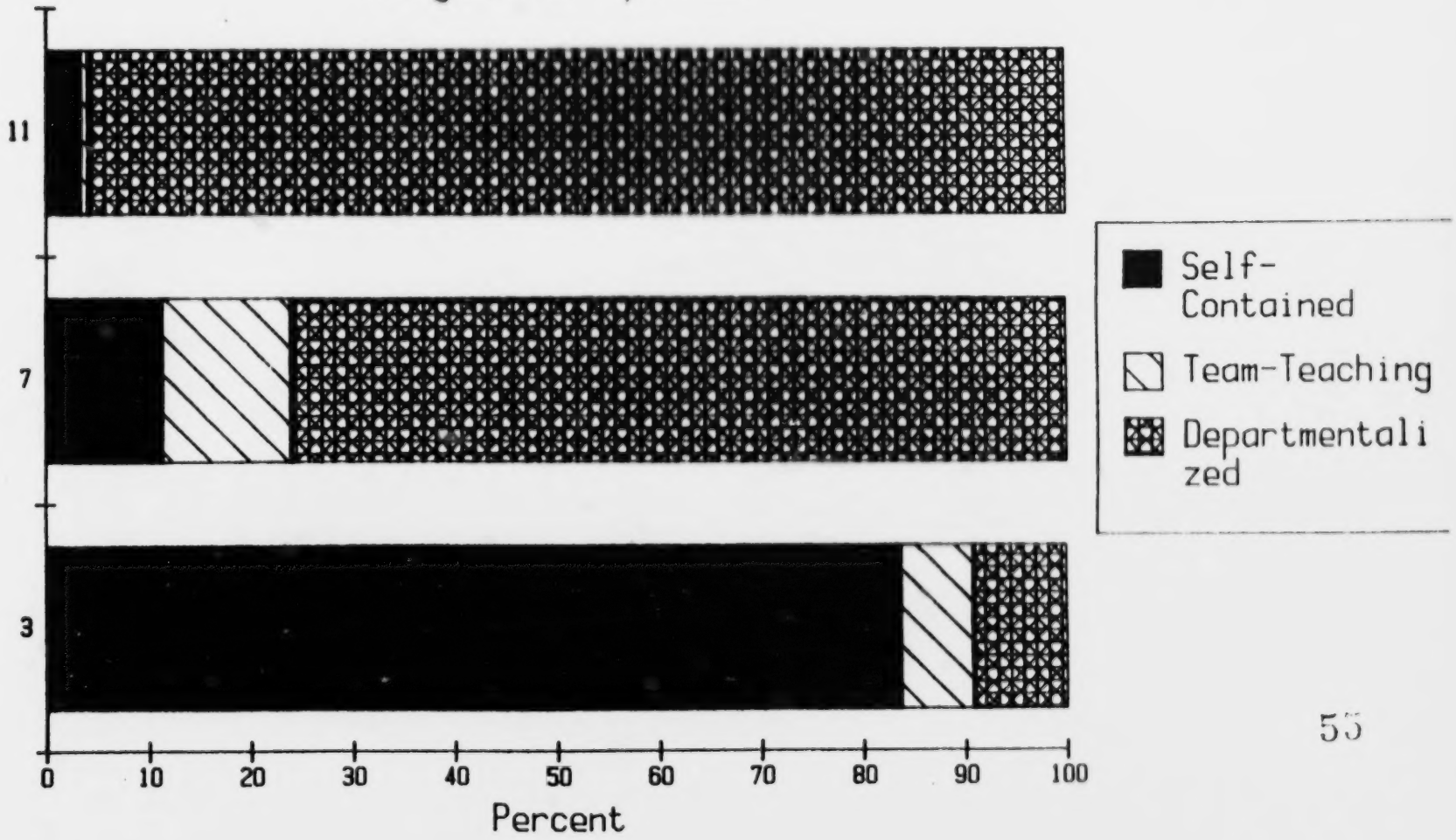


FIGURE 10: Percent of National Teachers Who Teach One Subject a Majority of the Time, by Grade

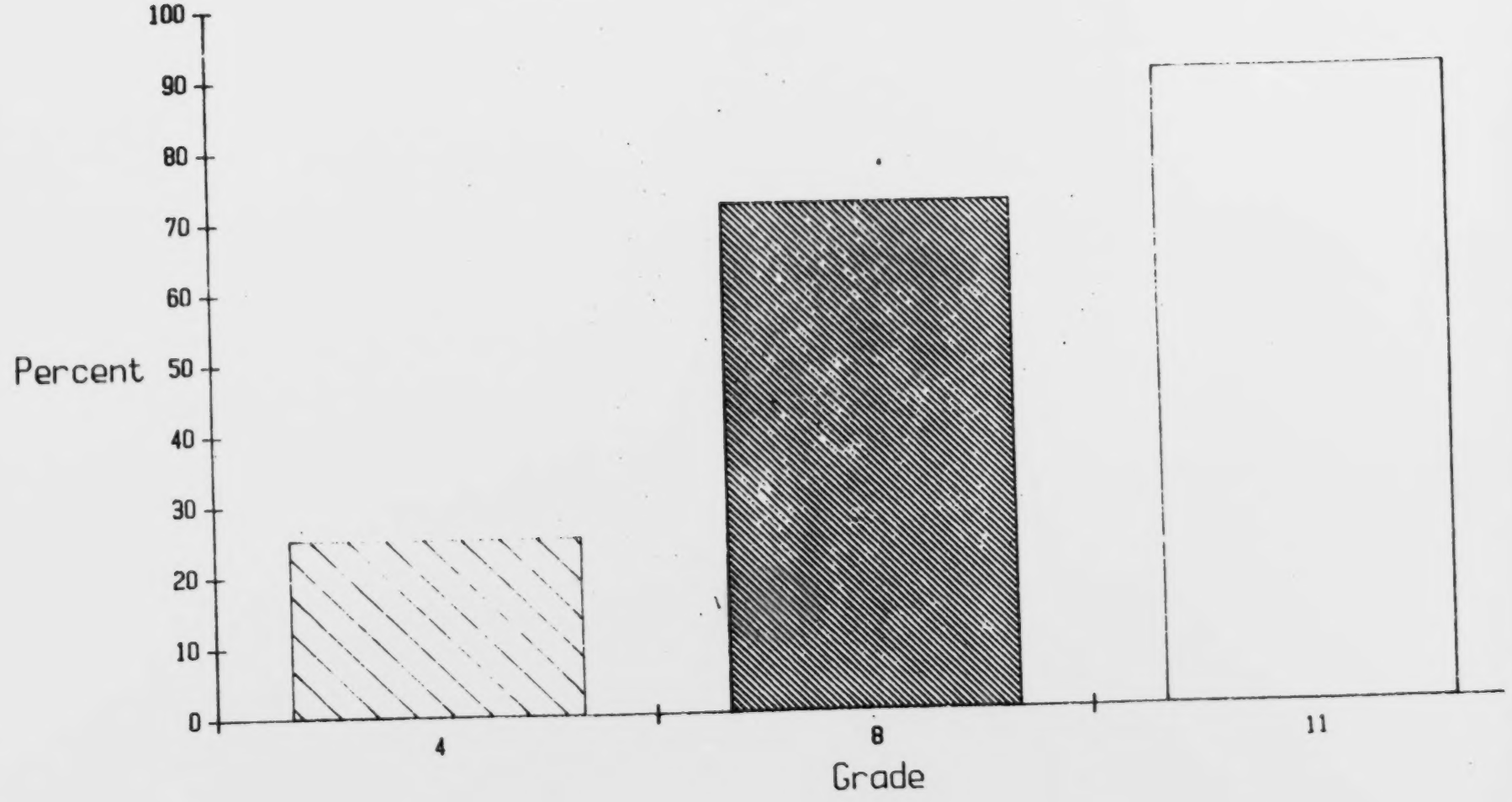


FIGURE 11: National Principal Reports of Use of Specialized Teachers, by Grade and Subject

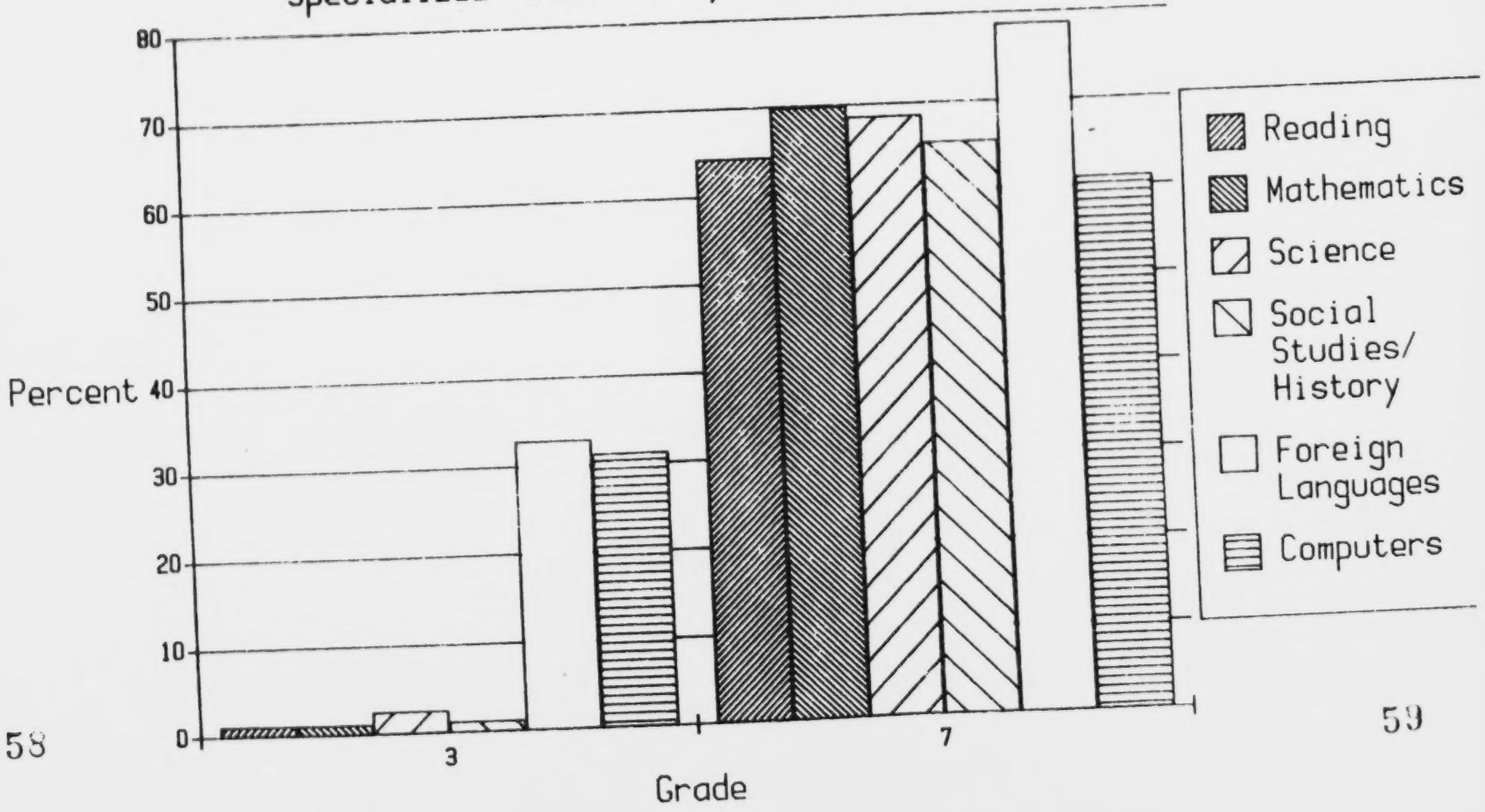


FIGURE 12: National Principal Reports of Between-Class Ability Grouping, by Grade and Subject

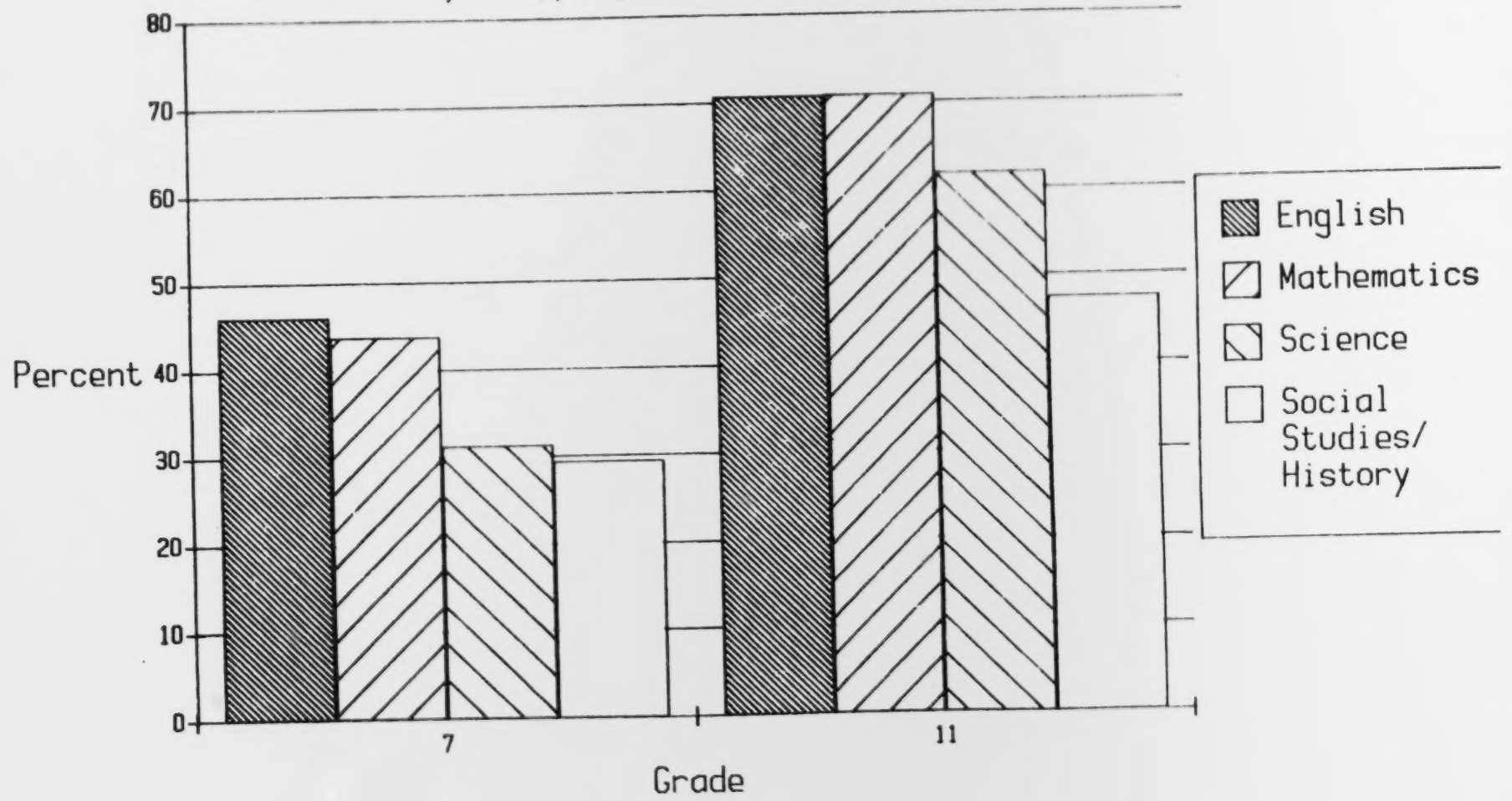
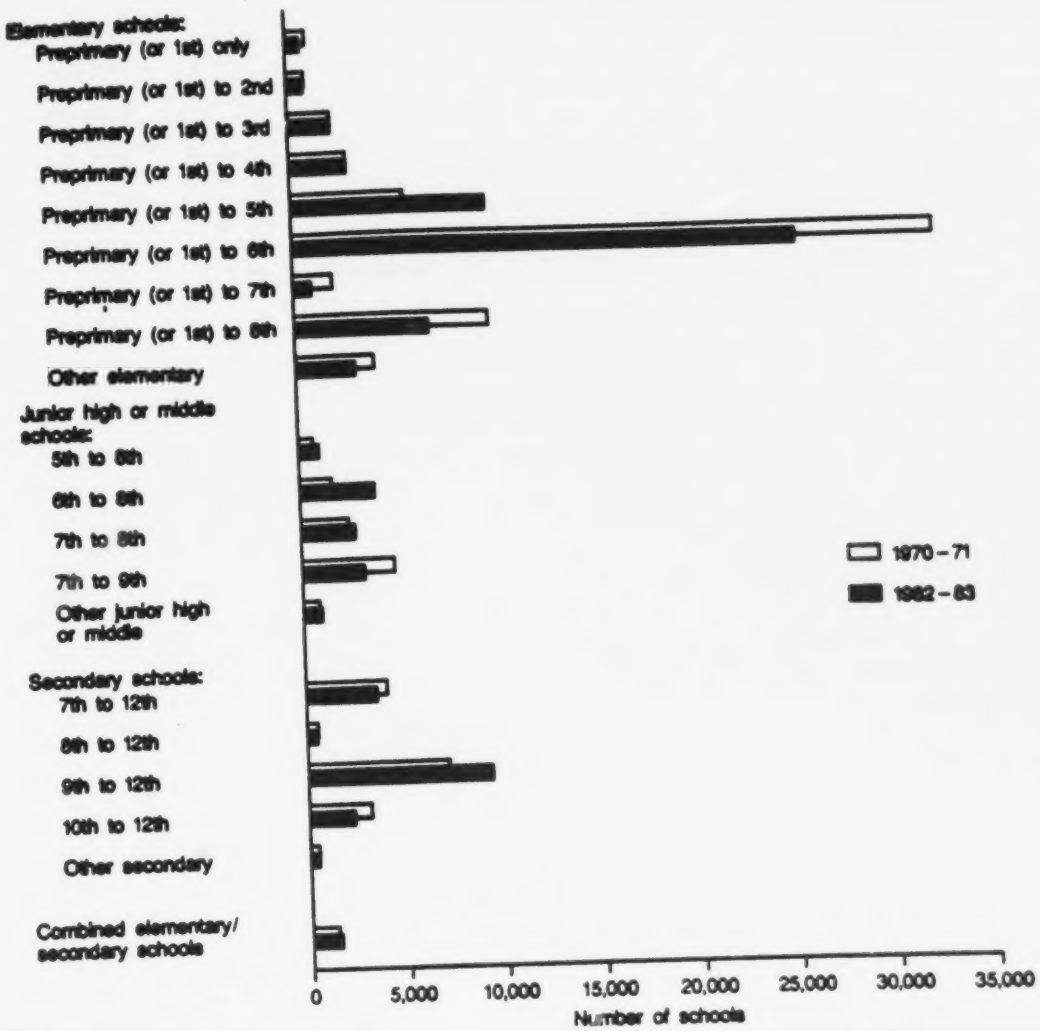


FIGURE 13

Number of Public Elementary/Secondary Schools, by Grade Span



The organization of public elementary/secondary schools showed remarkable variation in both 1970-71 and 1982-83. However, between those years, the number of middle schools and high schools rose, while the number of elementary schools fell.

SOURCE: U.S. Department of Education, Conditions of Education, 1985

Table 1

Intercorrelation Matrix of School Practices, Grade Level, and School Demography

	Self	Mixed	Dept.	Num. Tchr.	Re-group	Trks	Abil. Grp.	Grade	Size	SES
1. Self-contained	1.000	-.634	-.547	-.757	-.543	-.455	.345	-.621	-.416	-.097
2. Mixed	-.634	1.000	-.300	.188	.437	.292	-.070	.109	-.014	-.017
3. Departmentalized	-.547	-.300	1.000	.731	.197	.246	-.352	.648	.530	.139
4. Number Teachers	-.757	.188	.731	1.000	.432	.403	-.458	.759	.560	.126
5. Regrouping	-.543	.437	.197	.432	1.000	.561	-.155	.339	.282	.116
6. Tracks	-.455	.292	.246	.403	.561	1.000	-.116	.300	.262	.082
7. Ability Groups	.345	-.070	-.352	-.458	-.155	-.116	1.000	-.435	-.368	-.100
8. Grade Level	-.621	.109	.648	.759	.339	.300	-.435	1.000	.481	.133
9. Size	-.416	-.014	.530	.560	.282	.262	-.368	.481	1.000	.149
10. Student SES	-.097	-.017	.139	.126	.116	.082	-.100	.133	.149	1.000

Table 2

Effects of Grade Level on School Practices, With and Without Controls (N=3238)

	Grade Level (no controls)		Grade Level (controlling for enrollment size and student SES)	
	b	Beta	b	Beta
Self-Contained Classes	-.1315	-.621	-.1140	-.538
Mixed Classes	.0203	.109	.0279	.150
Departmentalized Classes	.1113	.648	.0859	.500
Number of Teachers Per Student	.4985	.759	.4097	.624
Some Regrouping of Classmates	.0720	.339	.0530	.250
Use of Between-Class Grouping (Tracks)	.0606	.300	.0426	.211
Use of Within-Class Grouping	-.0710	-.435	-.0540	-.330

---

b = unstandardized regression coefficient; Beta = standardized regression coefficient (which has the same value as the zero-order correlation when there are no control variables used).

Table 3

Percent Distributions of Teacher Descriptions of Their Teaching Assignments, by School Level (Source: 1985-86 National Assessment of Educational Progress)

A. What subject do you teach the majority of the time?

	Teachers in Grade 4 Schools	Teachers in Grade 8 Schools	Teachers in Grade 11 Schools
I don't teach one subject a majority of the time	74.7	27.9	9.8
Reading/Language arts	21.9	7.4	0.7
English	0.1	14.1	21.1
Mathematics	0.4	25.1	26.6
Science	0	20.3	21.4
Computers	0	0.1	0.6
Social studies	0	0.9	6.1
History	0	0.1	10.3
Other	2.8	4.0	3.2

B. What best describes your current teaching assignment?

	Teachers in Grade 4 Schools	Teachers in Grade 8 Schools	Teachers in Grade 11 Schools
Self-Contained Class-you teach the same students all or a significant part of the day.	78.0	21.1	9.6
Team-Teaching-you and one or more teachers teach a group of students for all or a significant part of the day.	14.0	9.6	3.1
Departmentalized Situation-you teach several classes of different students.	7.9	69.3	87.2

Table 4

Percent Distributions of Principal Descriptions of Instructional Organization in their School, by Grade Level (Source: 1985-86 NAEP)

A. What is the major way your...teaching staff is organized? (Exclude art, music, physical education, etc.)

	Grade 3	Grade 7	Grade 11
Self-contained class-one teacher teaches the same students all or a significant part of the day.	83.6	11.3	3.3
Team-teaching-two or more teachers teach a group of students for all or a significant part of the day.	7.2	12.7	0.8
Departmentalized situation-one teacher teaches several classes of different students.	9.2	75.9	95.8

B. Who is primarily responsible for teaching the following subjects...in your school?

	To Third Graders			To Seventh Graders		
	Regular Teacher	Specialized Teacher	Subject Not Taught	Regular Teacher	Specialized Teacher	Subject Not Taught
Reading	98.8	1.2	0	35.5	64.0	0.5
Mathematics	98.8	1.2	0	30.0	69.8	0.2
Science	97.2	2.6	0.2	30.9	67.8	1.3
Computers	47.0	21.3	31.6	27.8	43.5	28.6
Social studies/history	98.4	1.3	0.2	34.2	65.0	0.8
Foreign languages	11.6	5.7	82.8	7.8	28.8	63.3

C. Are...students assigned to classes by ability (so that some classes are higher in average ability than others) in any of the following subjects? (Percent "Yes")

	Seventh Graders	Eleventh Graders
English	46.1	70.7
Mathematics	43.8	70.8
Science	31.3	61.8
Social studies/history	29.4	47.4

Table 5

A Comparison of NAEP and Pennsylvania EQA Data on School Staffing Practices, for Selected Elementary, Middle and Secondary Grades

	Elementary				Middle				Secondary		
Staffing Practices	NAEP P3	NAEP T4	EQA 3	EQA 4	NAEP P7	NAEP T8	EQA 7	EQA 8	NAEP P11	NAEP T11	EQA 9
Self-contained	83.6	78.0	76.7	61.4	11.3	21.8	0	0	3.3	9.6	0
Team-teaching (Mixed)	7.2	14.0	23.1	32.1	12.7	9.6	16.8	15.5	0.8	3.1	19.8
Departmentalized	9.2	7.9	0.2	6.6	75.9	69.3	82.7	84.0	95.8	87.2	79.7

NAEP/P3 = NAEP Principals report on Grade 3
NAEP/T4 = NAEP Teachers report on Grade 4
EQA/3 = Pennsylvania EQA report on Grade 3
EQA/4 = Pennsylvania EQA report on Grade 4

NAEP/P7 = NAEP Principals report on Grade 7
NAEP/T8 = NAEP Teachers report on Grade 8
EQA/7 = Pennsylvania EQA report on Grade 7
EQA/8 = Pennsylvania EQA report on Grade 8

NAEP/P11 = NAEP Principals report on Grade 11
NAEP/T11 = NAEP Teachers report on Grade 11
EQA/9 = Pennsylvania EQA report on Grade 9

Table 6

Variations in School Practices, by Grade Level and School Grade-Span

(Sample size is shown in parentheses)

Grade and Grade-Span	Staffing (%)				Ave. No. of of Teachers per Student		Scheduling (%)				Between-Class Grouping (%)		Within-Class Grouping (%)	
	Self-Contained	Mixed	Depart-ments				Stay with Same Class	Regroup for 1 or 2 Subjects	Regroup for Most Subjects					
Grade 4														
K to 4 or 5	71.5	25.3	3.2	(158)	1.69	(158)	51.3	44.9	3.8	(158)	58.6	(157)	93.4	(152)
K to 6	45.9	44.4	9.7	(196)	2.02	(196)	39.8	54.1	6.1	(196)	68.6	(194)	89.6	(192)
Grade 6														
K to 6	41.1	44.9	14.0	(236)	2.17	(235)	39.7	52.3	8.0	(237)	67.7	(235)	89.4	(235)
4 or 6 to 8	1.9	64.1	34.0	(53)	3.86	(52)	28.3	47.2	24.5	(53)	90.2	(51)	53.8	(54)
Grade 7														
5 to 8	0	15.0	85.0	(60)	4.70	(61)	33.9	30.6	35.5	(62)	94.9	(59)	44.3	(61)
7 to 9 or 12	0	16.2	83.8	(105)	4.89	(107)	39.2	21.5	39.2	(107)	89.5	(105)	52.8	(106)
Grade 9														
7 to 9	0	2.9	97.1	(35)	4.92	(37)	8.6	28.6	62.9	(35)	94.1	(34)	26.7	(30)
7 to 12	0	28.8	71.2	(66)	4.97	(67)	22.4	34.3	43.3	(67)	87.3	(63)	27.1	(59)
9 to 12	0	18.6	81.4	(59)	4.95	(59)	1.7	10.2	88.1	(59)	88.3	(60)	25.4	(59)

Table 7

Summary of Multiple Regression Analyses of Selected School Practices on Highest Grade in School, Total Enrollment in Grade, and Parents' Education of Average Student in Grade, By Grade Level

School Practice (Dependent Variable)	Highest Grade			Grade Enrollment			Parents' Education		
	B	Beta	t	B	Beta	t	B	Beta	t
Self-Contained									
Grade 4	-.1328	-.253	6.2	-.0034	-.223	5.3	-.0978	-.083	2.0
Grade 6	-.0850	-.188	3.9	-.0021	-.247	5.0	-.1508	-.130	2.9
Mixed Staffing									
Grade 4	.1106	.218	5.3	.0033	.226	5.4	.1096	.096	2.3
Grade 6	.0631	.131	2.5	.0009	.101	1.9	.0965	.078	1.6
Grade 7	.0117	.063	0.8	-.0015	-.329	4.4	.0467	.042	0.6
Grade 9	.0282	.110	1.6	-.0007	-.195	2.7	-.0230	-.020	0.3
Departmentalized									
Grade 4	.0223	.078	1.8	.0001	.009	0.0	-.0118	-.018	0.4
Grade 6	.0219	.057	1.1	.0012	.165	3.1	.0543	.055	1.1
Grade 7	-.0117	-.063	0.8	.0015	.329	4.4	-.0467	-.042	0.6
Grade 9	-.0282	-.110	1.6	.0007	.195	2.7	.0230	.020	0.3
Number of Teachers per Student									
Grade 4	.2572	.245	6.0	.0088	.288	6.9	-.0135	-.006	0.0
Grade 6	.3669	.307	7.2	.0086	.377	8.7	.2946	.096	2.4
Grade 7	.0822	.301	4.0	.0018	.269	3.6	-.0159	-.010	0.0
Grade 9	.0042	.028	0.3	-.0003	-.128	1.7	.0837	.122	1.7
Multiple Class Groups for Each Student									
Grade 4	.0342	.065	1.6	.0043	.283	6.8	.2145	.180	4.4
Grade 6	-.0302	-.065	1.3	.0021	.234	4.8	.2779	.232	5.0
Grade 7	-.0057	-.023	0.3	.0007	.108	1.4	.4164	.283	4.1
Grade 9	.0040	.019	0.3	.0006	.196	2.8	.1932	.207	3.0
Between-Class Grouping (Tracks)									
Grade 4	.0472	.093	2.2	.0036	.242	5.7	.1677	.147	3.5
Grade 6	.0111	.026	0.5	.0023	.278	5.6	.2372	.213	4.7
Grade 7	-.0092	-.062	0.8	.0007	.184	2.4	-.0041	-.005	0.0
Grade 9	-.0139	-.067	0.9	.0002	.076	1.0	.0124	.013	0.0
Within-Class Grouping									
Grade 4	-.0220	-.070	1.6	-.0013	-.147	3.3	-.0289	-.041	0.9
Grade 6	-.0587	-.156	3.2	-.0022	-.309	6.2	.0444	.046	1.0
Grade 7	.0196	.076	1.0	-.0002	-.032	0.4	.1080	.071	0.9
Grade 9	.0124	.043	0.6	.0002	.059	0.8	-.0174	-.013	0.0

Appendix

This appendix describes the Pennsylvania EQA sample and provides the Principal Survey instrument we used to supplement the EQA teacher and student data.

The Educational Quality Assessment is a program of tests and questionnaires administered by Pennsylvania's State Department of Education which was required to be administered in all Pennsylvania school districts during the period 1978-83 and which subsequently became a voluntary program. The districts that participated in the 1986 assessment used in this study are not representative of the entire state because the two largest city districts (Philadelphia and Pittsburgh) did not volunteer for inclusion in EQA. But several big city suburbs and several middle-sized cities are included as well as small and rural districts; thus EQA data is useful to gauge the variety of practices to be expected in all but the largest districts. Because the EQA sample covers a substantial variety of school practices and outcomes, it is well suited for relational analyses. In terms of descriptive results, a comparison of EQA with nationally representative data provided by the National Assessment of Educational Progress is presented and discussed in this paper.

The Principal Survey was mailed from Johns Hopkins University to the list of EQA schools containing grades 4, or 6, or 7, or 9 that was provided by the Pennsylvania State Department. The response rate to this mail survey was 90 percent. However, when we merged the principal file with the other EQA data files in the selected

grades we discovered that the mailing lists provided to Johns Hopkins were incomplete, with the result that the number of EQA schools with both Student, Teacher and Principal data was approximately 80 percent at each selected grade.

EQA PRINCIPAL QUESTIONNAIRE

School Name _____

District Name _____

Dear Principal or Building Administrator:

Over the years schools have developed various practices of assigning students and teachers to different classes and instructional groups. Yet only rarely has this information been gathered systematically and tabulated so that schools could see how other schools group students for instruction. This questionnaire, prepared by the Johns Hopkins Center for Research on Elementary and Middle Schools in cooperation with the Pennsylvania State Department of Education, is being field tested in this year's Educational Quality Assessment.

Most of the questions focus on the grouping and scheduling of students and the assignment of teachers to subjects and classes. Your answers will be kept confidential, and reports will *not* identify specific schools. If you need clarification of any question, call Dr. McPartland, collect, at 301-338-7570.

Please mark your answers on this survey form and mail it to Johns Hopkins in the enclosed postage-paid envelope.

Thank you for your participation.

Sincerely,

J. Robert Coldiron
Educational Quality Assessment
Pennsylvania Dept. of Education
Harrisburg, PA 11726

James M. McPartland
Center for Research on Elementary & Middle Schools
Johns Hopkins University
Baltimore, MD 21218

The first questions give us a general description of the students served by your school.

Q-1 What is the lowest and highest grade level included in this school? ***(CIRCLE ONE GRADE IN EACH ROW.)***

a) Lowest Grade:	K	1	2	3	4	5	6	7	8	9	10	11	12
b) Highest Grade:	K	1	2	3	4	5	6	7	8	9	10	11	12

Q-2 How many students are enrolled at your school? ***(Exact number is not necessary; give best estimate.)***

Total Student Enrollment: _____

Q-3 About what percent of your students receive . . . *(ANSWER BOTH PARTS; IF "NONE," WRITE "0.")*

a) **Free lunch** ..... _____ Percent

b) **Reduced-price lunch** ..... _____ Percent

Q-4 About what percent of the students in your school participate in the following programs?
(IF "NONE," WRITE "0.")

a) **Chapter 1** ..... _____ Percent

b) **Special Education** ..... _____ Percent

c) **Bilingual** ..... _____ Percent

d) **Gifted and Talented** ..... _____ Percent

The remaining questions ask about teacher and student assignments for instruction in Grades 1 through 9. These questions are about ACADEMIC SUBJECTS ONLY, which for this questionnaire include: reading, English or language arts; mathematics; science; social studies; and foreign languages. For the remaining questions do *not* consider other subjects (such as art, music, physical education, vocational education, home economics, etc.), and do *not* include special education classes.

Q-5 How are the teaching assignments in academic subjects organized for most of the teachers at your school?
FOR EACH GRADE LEVEL, ANSWER WITH ONE OF THE FOLLOWING CHOICES:

SELF CONTAINED	<=> Teachers teach all academic subjects to the same class
DEPARTMENTALIZED	<=> Teachers teach one academic subject area to 4 or 5 classes
MIXED	<=> Teachers teach more than one class and more than one subject area
NO GRADE	<=> No students in that grade

Circle One Choice for EACH GRADE LEVEL

a) Grade 1	Self-Contained	Departmentalized	Mixed	No Grade 1
b) Grade 2	Self-Contained	Departmentalized	Mixed	No Grade 2
c) Grade 3	Self-Contained	Departmentalized	Mixed	No Grade 3
d) Grade 4	Self-Contained	Departmentalized	Mixed	No Grade 4
e) Grade 5	Self-Contained	Departmentalized	Mixed	No Grade 5
f) Grade 6	Self-Contained	Departmentalized	Mixed	No Grade 6
g) Grade 7	Self-Contained	Departmentalized	Mixed	No Grade 7
h) Grade 8	Self-Contained	Departmentalized	Mixed	No Grade 8
i) Grade 9	Self-Contained	Departmentalized	Mixed	No Grade 9

Q-6 In the ACADEMIC subjects—reading, English/language arts, math, science, social studies, and foreign languages—how many different teachers does the "typical student" have during an average week?
FOR EACH GRADE LEVEL CIRCLE ONE NUMBER

For a Typical Student, Number of Different Teachers Providing Academic Instruction

a) Grade 1	1	2	3	4	5+	No Grade 1
b) Grade 2	1	2	3	4	5+	No Grade 2
c) Grade 3	1	2	3	4	5+	No Grade 3
d) Grade 4	1	2	3	4	5+	No Grade 4
e) Grade 5	1	2	3	4	5+	No Grade 5
f) Grade 6	1	2	3	4	5+	No Grade 6
g) Grade 7	1	2	3	4	5+	No Grade 7
h) Grade 8	1	2	3	4	5+	No Grade 8
i) Grade 9	1	2	3	4	5+	No Grade 9

If your answers on this page do not completely reflect teachers' assignments in your school, please circle the answers that come closest, and describe your practices more fully on the last page or on a separate sheet.

Q-7 Do students remain with the same group of classmates throughout the day for their academic subjects, or do they change classmates for different subjects?
FOR EACH GRADE, ANSWER WITH ONE OF THE FOLLOWING CHOICES:

STUDENTS KEEP SAME CLASSMATES FOR ALL ACADEMIC SUBJECTS	<=>	Students remain with the same classmates for all academic subjects.
STUDENTS ARE RE-GROUPED FOR ONE OR TWO ACADEMIC SUBJECTS	<=>	Students stay together with the same class for most academic subjects but are regrouped with students from other classes for one or two academic subjects (for example, regrouped for Reading and/or Math).
STUDENTS ARE RE-GROUPED FOR MOST ACADEMIC SUBJECTS	<=>	Students change classmates for all or most academic subjects.
NO GRADE	<=>	No students at this grade level.

Circle one choice for each Grade to indicate how students are grouped between classes.

	SAME CLASSMATES FOR ALL ACADEMIC SUBJECTS	REGROUPED FOR 1 OR 2 ACADEMIC SUBJECTS	REGROUPED FOR MOST ACADEMIC SUBJECTS	NO GRADE
a) Grade 1	Same classmates	Regrouped for 1-2	Regrouped for Most	No Grade 1
b) Grade 2	Same classmates	Regrouped for 1-2	Regrouped for Most	No Grade 2
c) Grade 3	Same classmates	Regrouped for 1-2	Regrouped for Most	No Grade 3
d) Grade 4	Same classmates	Regrouped for 1-2	Regrouped for Most	No Grade 4
e) Grade 5	Same classmates	Regrouped for 1-2	Regrouped for Most	No Grade 5
f) Grade 6	Same classmates	Regrouped for 1-2	Regrouped for Most	No Grade 6
g) Grade 7	Same classmates	Regrouped for 1-2	Regrouped for Most	No Grade 7
h) Grade 8	Same classmates	Regrouped for 1-2	Regrouped for Most	No Grade 8
i) Grade 9	Same classmates	Regrouped for 1-2	Regrouped for Most	No Grade 9

Q-8 For which academic subjects are students assigned to homogeneous classes on the basis of similar abilities or achievement levels?
(CIRCLE AS MANY SUBJECTS AS APPLICABLE FOR EACH GRADE LEVEL.)

Circle the ACADEMIC SUBJECTS for which students are assigned to homogeneous classes by ability

a) Grade 1	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 1
b) Grade 2	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 2
c) Grade 3	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 3
d) Grade 4	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 4
e) Grade 5	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 5
f) Grade 6	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 6
g) Grade 7	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 7
h) Grade 8	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 8
i) Grade 9	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 9

If your answers on this page do not completely reflect how you assign students to academic classes, please describe your practices more fully on the last page or on a separate sheet.

Q-9 For which academic subjects do most teachers usually use ability groups *within the class* (e.g. within the Grade 6 class taking reading between 9:00 and 9:45 there may be 3 reading groups, etc.)? *(CIRCLE AS MANY SUBJECTS AS APPLICABLE FOR EACH GRADE LEVEL.)*

Circle all subjects for which most teachers use IN-CLASS ability groups

a) Grade 1	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 1
b) Grade 2	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 2
c) Grade 3	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 3
d) Grade 4	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 4
e) Grade 5	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 5
f) Grade 6	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 6
g) Grade 7	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 7
h) Grade 8	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 8
i) Grade 9	None	All	Reading	English	Math	Science	Soc. Stud.	No Grade 9

You may use the space below or an added page to describe more fully your answers to previous questions on teacher assignments or grouping of students for instruction. Are there any other aspects of grouping, scheduling, or teacher assignments used in this school for academic subjects that you have not yet described in this questionnaire (such as team teaching, multi-aged groupings of students, school-within-a-school, etc.)? Please use the space below or an added page to describe these practices. Indicate the grades and subjects for for which each practice is used.